Work Project presented as part of the requirements for the Award of a Masters Degree from NOVA School of Business and Economics

Consulting Project for the Oceano Azul Foundation

Adding Value to the Berlengas' barnacle for its Harvesters to Maintain Long-term Sustainability

Consulting lab carried out under the supervision of:

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Finally, we would like to thank all Nova staff for making this work possible, as well as our family and friends for constant support.

GLOSSARY

Goose Barnacle	Under the scientific name *pollicipes pollicipes*, this species is present between the Atlantic coasts of France and Senegal. Well-regarded seafood in the Iberian Peninsula.
Berlengas Natural Reserve (BNR)	Portuguese archipelago off the coast of Peniche, with no permanent habitation and a special status of administration due to its rich biodiversity, which includes its barnacle.
Harvester	A harvester of the Berlengas' barnacle must follow different harvesting rules due to the protected nature of the archipelago, limited to 40 personal licenses to avoid overfishing.
Closing Season	Periods in which regulations do not allow barnacle harvesting in the BNR. Occur from January to March and August to September, Mondays, Fridays, weekends and holidays.
Calibration	Separation of the barnacles in different sizes called "calibers" during its selection, to sell them at different prices.
Warehouses	Places where many barnacle harvesters perform the selection of their product after picking them. They usually either use their own or one of their vessel crew.
Co-management Committee	Union of stakeholders that will take control of decision-making of issues regarding the Berlengas' barnacle from June 2018 onwards, facilitating the implementation of projects.
Cooperative system	A structure based on the union of harvesters that sells their product as one entity and brand representing all of them.
Batch	A set of barnacles ready for sale.
Lota	The space near a port where the first sale of a sea species can be auctioned. Often usual in many fishing cases, yet it is not common in the barnacle sales.

EXECUTIVE SUMMARY

Management Consulting Field Lab, Spring 2018

Description

Management Consulting Labs are projects performed in student teams for Portuguese entities, under the advisory of Professor Constança Casquinho. They aim at developing managerial and soft skills and providing a direct added value for the client organization.

During the course of this project, the students team often worked in the Oceano Azul Foundation's headquarters, where weekly meetings were held with the client and three presentations were performed for the Advisory Board.

EXECUTIVE SUMMARY

Oceano Azul Foundation

Initiated in 2017, the Oceano Azul Foundation creates and implements projects that seek to achieve ocean sustainability and engage society in ocean stewardship. As the oceans are a key economic resource and above all a major source of planet's life. Their impact focuses on raising Portugal's role as an ocean country, trying to promote its protection on national, continental and global agendas, reaching 1,2M people yearly through Oceanário de Lisboa.

Co-Management Committee

The Co-Management Committee will be an entity to be founded in 2018 to take decisions regarding all issues related to the barnacle harvesting in Berlengas. It will be comprised of four stakeholders representing the areas of harvesting, the environment, the investigation and the governmental representatives. The goal is to have diversity of insights that allows the best decision-making process.

The project

The key objective of this consulting project is to provide a solid evidence-based plan to value the Berlengas' gooseneck barnacles. The two challenges this project should tackle were: a better sustainability of the resource and an increase in harvesters' income. These two factors are connected, as the harvesters' actions are the only ones that can in fact contribute to the sustainability of the resource. But to promote less and more careful harvesting, incentives had to be created.

The project was divided in three stages: diagnosis, analysis, and recommendations. The first stage consisted of a better understanding of the situation and gathering of the biggest possible amount of information, from contacting many different stakeholders. The second stage was where possible changes were selected and compared against the current situation and against each other, in order to come up with final recommendations that would add value for the product, the harvesters, and the resource sustainability.

EXECUTIVE SUMMARY

The first part of the project consisted on diagnosing the current situation of this very particular environment. Through several interviews with entities from different areas, such as governmental (DGRM, Fisheries State Department), academic (Universidade de Évora, Instituto Politécnico de Leiria), non-profit (WWF) Docapesca, restaurants, harvesters associations, among others, we could understand the nature of the topic and derive some important conclusions about the current situation. We were also able to identify possibilities of improvements in several stages of the harvesters' process, where we based our recommendations on.

Main takeaways:

1. The stock levels have been deteriorating due to lack of supervision and bad-practices.
2. There are many subgroups of harvesters that share the boat, the warehouses and its costs.
3. The majority of the harvesters have their own sales channels.
4. Sales are made on the basis of trust and long-term relations between harvesters and restaurant owners. Priority is given to buyers with whom they negotiate for a longer period.
5. Restaurants are the stakeholders that absorb the greater part of the margins, charging prices 150%-200% higher than the buying price.
6. There is recognition of the Berlengas' barnacles and its higher value amongst consumers and restaurants.

EXECUTIVE SUMMARY

The objectives of the project were to create incentives to reduce the harvested quantities, incentivize the harvesting of better barnacles, and increasing the harvesters income. For these purposes, we focused our recommendations on three vectors: Organization, certification, and selling process.
For organization, we identified the need to have a common place where all harvesters could go to. The optimal solution was the creation of a space in the harbour where the cleaning and selection of the barnacles after its harvest would be possible for all harvesters.
For certification, the best option is to create a own certificate and translate it into a brand, in order to make use of the existing recognition of consumers and being able to communicate the most valuable characteristics of the product.
Finally, the selling process would be optimized if it was made jointly. Two options were considered: to create a cooperative system, where harvesters would sell the product at defined prices and a commercial department would then resell it, making profits from it; or to centralize all the product in a location and sell it through an auction.

Centralized selection	Certification	Selling scenario A: cooperative	Selling scenario B: Centralized auction
- Better control of harvested and sold quantities - Create possibility of certifying, packaging, and labeling the Goose Barnacles - Having a proper space to promote union and foster knowledge sharing	- Show unicity of the product, with superior value, opening doors to the creation of a brand - Guarantee the origin of the product. - Difficult the selling of goose barnacles from other origins as from the Berlengas - Create availability to pay more	- Increase the selling price to buyers - Incentives to harvest bigger and better barnacles - Possibility to adjust the offer according to demand - Reduce risks and costs for harvesters	- The buyers would need to go to the place of sale, reducing harvesters costs - Possibility to adjust the offer according to demand - Harvesters can oversee the selling process - Many risks associated with unpredictability

EXECUTIVE SUMMARY

Overall, three main conclusions were retrieved to show harvesters the possibilities to increase their income.

First, all else equal, the calibration brings value to harvesters, being the margins of those who do it higher than those who do not. By calibrating, harvesters accomplish margins **40%** higher.

Without calibration		
Margin before taxes		268,79 €
Margin per kg		**19,62 €**

With calibration		
Margin before taxes		373,91 €
Margin per kg		**27,29 €**

Second, the benefits of centralizing the sale are obvious, as reductions of costs and increase of bargaining power reflect themselves in higher margins.

Selling in auction		
Margin before taxes		409,00 €
Margin per kg		**29,85 €**

Selling to a cooperative		
Margin before taxes		478,26 €
Margin per kg		**34,91 €**

Finally, comparing the two selling systems, the one that provides higher income and improves the harvesters quality of life, eliminating the need for selling tasks is the cooperative system.

AGENDA

1. Methodology
2. Background
3. Analyses
4. Implementation
5. Limitations
6. Personal Reflections
7. References

METHODOLOGY

In order to understand the current situation, we communicated with various stakeholders to take knowledge of the issues, the challenges and the opportunities, and to be able to analyse and statistically compare valuation hypotheses.

Information Gathering

Interviews with Stakeholders | 9

1. DGRM
2. IPMA
3. Docapesca
4. State Secretary of Fishing
5. IPL – ESTM
6. University of Évora
7. Captaincy of the Port of Peniche
8. ASAE
9. WWF Spain

Interviews with Consumers | 36

- Qualitative Interviews (6):
  - Most valued characteristics
  - Perception of differences between barnacles
- Quantitative Interviews (30):
  - Less in-depth survey of barnacle consumption, with larger sample

(Appendix 1, 2, 3)

Benchmarking | 8

1. *Cofradia de Baiona*
2. Carnalentejana
3. Perceves de Vila do Bispo
4. *Sonso* from Barcelona
5. ArtesanalPesca
6. Cheries from Fundão
7. Propeixe Matosinhos
8. Sardines in Portugal

Interviews with Seafood Restaurants | 4

- Qualitative Interviews
- Understanding the value chain
  - Process of purchase and sale
  - Who runs the demand
- Perception of the BNR barnacle

Interviews with Harvesters | 25 harvesters

- Qualitative Interviews (3)
- Quantitative Interviews with over 60% of the harvesters (25), representing all vessels:
  - Harvest and selection
  - Way of selling and prices
  - Type of clients
  - Costs

(Appendix 4)

METHODOLOGY

The state of the resource was understood through studies conducted by biologists, the operations map through the accompaniment of a harvester during the process, and the pricing through inquires to harvesters

State of Resource

Through contact with some of the entities (DGRM, IPMA and University of Évora) as well as the harvesters that we held interviews with, we got in touch with a general idea of the scientific characteristics of the Berlengas' barnacle, how it differentiates from others and its trends. To these insights we added studies from University of Aveiro and IPLeiria that provided verified information regarding the species and results from questionnaires, allowing us to use both sources to perform our diagnostic.

Operations Map (Process)

To get an in-depth understanding of the process involved in the barnacle harvest, we accompanied one of the harvesters in a harvesting morning, following him in every stage of the process, from the decision of the zone to the final sale. Moreover, we were present several times at the Peniche harbour, where we watched the process of selection and decision to sell to different stakeholders. From them on, we drew the entire overall process, and divided them into three phases (sea, land and sale), to identify efficiency improvements and come up with recommendations.

Pricing

Our first contact with the prices came from Docapesca data and a 2013 study from the University of Évora. We then received insights from three qualitative interviews with different profiles of harvesters, followed by a survey of quick direct questions to a sample of 25 harvesters, over 60% of all licenced Berlengas harvesters. This provided a reliable source of the practised prices, and its relation with different techniques and type of buyer, allowing us to understand where the biggest valuations go to and which harvesters sell at the most fruitful prices.

METHODOLOGY

Interviews and inquires to various stakeholders, such as harvesters, restaurants, and final consumers allowed to have a deeper understanding of the current situation of margins, perceptions, and industry.

Current Margins

Our goal was to calculate the margins of the most relevant stakeholders in the value chain, meaning harvesters, middlemen and restaurants. We received data to calculate the first one from their surveys, both from revenues (pricing data depending on calibers) and costs of a day of work, to reach their margin per kg. Middlemen margins were inferred from harvesters' shared ideas about the value chain, while restaurant margins came from a mix of harvester surveys and our own research of a dozen of seafood restaurants, some of them interviewed too.

Consumer Perceptions

To identify the perceptions the consumer has regarding the Berlengas' barnacle, we conducted dozens of interviews with barnacle consumers from diverse locations and age groups, six of them qualitative and thirty quantitative. The qualitative interviews were made using snowball sampling, while the quantitative inquires were partly made at seafood restaurants doors, in Lisbon, Ericeira, and Peniche, using the consumption of goose barnacles as a pre-recruiting question, and partly online. Insights included the price sensitivity of the consumer, complementary and substitute products, willingness to purchase certified higher-quality barnacle, preferences of barnacle origin and favoured characteristics.

Industry

The industry was studied through the Porter's 'Five Forces' model, with the harvesters' insights shaping the information for the resource, buyers, new entrants, substitution and rivalry. From then on, we listed the products that could serve as competition along with a classification of the threat of each. Afterwards, contact was made with several entities of authority (the DGRM, Maritime Police and the ASAE) to outline all the existing regulations and jurisdictions, so that we would know how our recommendations could conform to the rules.

METHODOLOGY

Benchmarking was very important to complement the lack of available information, and a big base for recommendations and implementation.

Benchmarking

Benchmarking took an important part on the development of the project as available information on the topic was scarce, being the study of best practices key to understand some issues. We contacted directly with WWF's Beti Nieto, who had a lot of insights and data about Galician barnacle harvest, specifically in Baiona. We also studied several examples of cooperative systems, in fisheries or other businesses. We held a meeting with Gonçalo Albino, commercial director of Carnalentejana, and further studied examples such as ArtesanalPesca, ProPeixe Matosinhos, and a fishery in Barcelona where co-management was successfully implemented.

Recommendations

As will be exposed further in this presentation, the three chosen areas of scenario implementation were Organization, Certification and Sale, and this is because our information gathering had shown potential for improvement in all of them. Our benchmarks had all shown a clear added value from deepening the unity between producers, with all interviewed entities and even some harvesters agreeing. The remaining areas of certification and sale improvement were made clear to us from the operations map as clear opportunities and economies of scale.

Implementation

To justify our analyses of the implementations to be recommended, we began with business models such as Porter's and VRIO, following then to designing the improvements in the operations map and finally comparing the new options with the existing ones. From the investment values of the different options, cost reductions and prices expected, it was possible to create P&Ls of the different hypothesis to promptly justify our recommendations, joining those calculations with predicted risks and advantages to create a full analysis.

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BACKGROUND - INTRODUCTION

This project comes as one of Oceano Azul Foundation's contributions to the Co-Management committee of the Berlenga's goose barnacle., by studying how it can be valued and preserved at the same time.

Co-Management Project in Berlengas' gooseneck barnacle harvest

Co-management, although not having a widely accepted definition, usually refers "to a suite of arrangements with different degrees of power sharing allowing joint decision-making by the state and user groups about a set of resources or an area" (Gutierrez, 2015). It has been seen as an effective solution to solve fisheries sustainability problems, as it transfers the management responsibility of the resource to the fishers/harvesters, together with other interested parts (Saintz-Trapaga, 2012).

WWF, after the success of implementing co-management systems in Spanish fisheries, is trying to do the same in Portuguese ones. After careful assessment, 11 case studies were identified, and in 2015 these 11 were reduced to 2, including the harvest of Berlengas Goose Barnacle (WWF, 2015). Currently, a committee is being implemented, comprising entities such as WWF, IPLeiria, University of Évora, DGRM, and the harvesters, amongst others, promoting the collaboration with governmental, non-governmental, scientific and actual working force elements.

The results of this project will therefore be one of Oceano Azul Foundation's contributions to the committee, to offer guidance in one of the most important vectors of the resource's management: its valuation; without disregard resource sustainability. The implementation of the measures here proposed will be subject to the acceptance and will of the committee, when it starts working at full capacity.

Sources:
Gutierrez N.L. (2015). Management and co-management options for small-scale fisheries in the Mediterranean and Black Sea. General Fisheries Commission for the Mediterranean
Sainz-Trapaga S. (2012). Reaching sustainable fisheries by engaging stakeholders through co-management. Fisheries Workshop, Split, 31 January – 1 February 2012.
WWF. (2015). Sumário Executivo do Relatório Final do Projeto Co-Pesca - Cenários para um processo de co-gestão das pescas no eixo Peniche-Nazaré.

BACKGROUND - PROBLEM

To dissect the problem, we structured it in a SCQA Technique (Situation, Complication, Question and Answer), to then realize how to solve it.

Situation

Margins are not evenly distributed and as harvesters strive to capture more value the state of the resource gets deteriorated.

Complication

A lack of union and sense of common goal between the harvesters, working under an uneffective supervision brings prices down, reducing their income

Question

Is it possible to create a valuation system for the Berlengas goose barnacle that safeguards the resource and increases harvesters' income?

Yes

Why?

The external and internal analysis indicate that there are points to be improved in order to capture a bigger margin.

How?

Focusing on three key aspects: Organization, certification and the selling process

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1. Methodology
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7. References

3. Analyses

3.1. Internal Analysis

a. Current Situation

b. Operations

c. Harvesting

3.2. External Analysis

CURRENT SITUATION – ACTIVITY OVERVIEW

Berlengas is an archipelago 10km from Peniche that holds good conditions for the life of the goose barnacle, a crustacean that is also an aliment highly valuable in Portugal and is harvested in Berlengas' unique ecosystem.

Berlengas' goose barnacle harvest is a perfect activity to test co-management systems in Portugal, as a series of regulatory, environmental characteristics and harvesters' will form the perfect conditions to its implementation

Berlengas archipelago	The Berlengas archipelago is situated at about 10 Kilometers from Peniche, in the Portuguese west coast. It consists of three small islands: Berlenga Grande, Estelas, and Farilhões. Being almost inhabited, it is since 2011 a part of UNESCO World Network of Biosphere Reserves, due to its diverse fauna and flora. It is also a Portuguese Nature Reserve, being covered by a set of particular and strict laws regarding people transit and hunting and fishing practices. *(Appendix 6)*
Goose barnacles	Goose Barnacles ("Percebes") are crustaceans who live attached to rocks in the intertidal zone. Under the scientific name *pollicipes pollicipes,* these barnacles feed themselves by filtering water nutrients, and depend a lot on the hydrodynamics of the zone they settle in. Due to the difficulty of its harvest, it has became an expensive type of seafood, with good economic value for the stakeholders involved in its sale resulting in heavy exploitation in most areas. (A. Sousa et al., 2013). *(Appendix 5)*
Goose barnacle harvest in Berlengas	The harvest of goose barnacles in the Nature reserve of the Berlengas has been studied for a long time. To safeguard the stocks, many laws to limit the harvest were implemented in the past. Firstly, there is limited number of attributed licenses to harvest in the archipelago, 40. Moreover, the harvesting days are limited, existing a closing season for the goose barnacles to recover and grow bigger. Finally, there are rules regarding the quantities allowed per harvester and the minimum sizes of Barnacles one can harvest. *(Appendix 6,7)*

Sousa, A., et al. (2013). Patterns of distribution and abundance of the stalked barnacle in the central and southwest coast of continental Portugal. Elsevier.

CURRENT SITUATION - RESOURCE

The stock levels have been analysed through the sale forms, scientific studies and harvesters' perception, in studies conducted by University of Évora. Overall, the main belief is that the resource status has been getting worse.

Although little is known of the goose barnacle biology, some studies have been made trying to deepen the knowledge:

Life Cycle

- It is slow and uncertain, depending much of its exposure to nutrients and the quality of the surrounding water;
- Its reproduction occurs normally between April and September:
  - The closed season happens within the 3 months before this phase and in the last two.

Differentiation

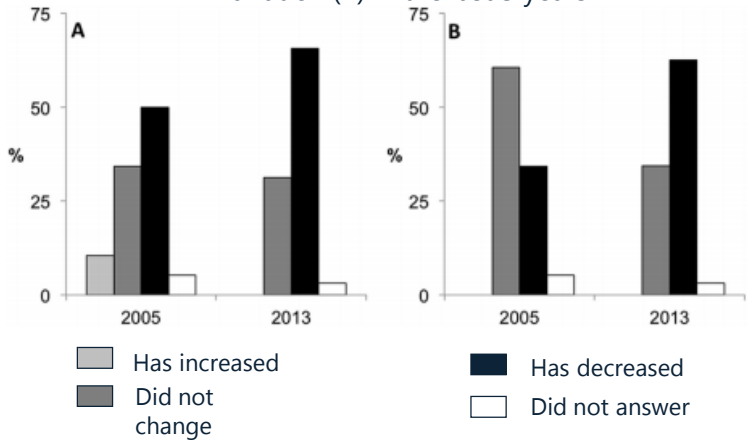
- According to a study from *University of Aveiro* and *IPLeiria*, it is possible to track Berlengas' barnacle facing its chemical elements;
- Due to a series of factors in the BNR there is a bigger percentage of big Barnacles, which does not mean, however, they are bigger in general

Source: Albuquerque, R., et al. (2016). Harvest locations of goose barnacles can be successfully discriminated using trace elemental signatures. Scientific Report.

Resource Status

- Studies from 2008 and 2015 point out for a negative trend of the resource quantity and quality for the Berlengas' Barnacle, based on:
  - Sale forms;
  - Biological studies in loco;
  - Questionaires to 80% of the Harvesters.
- Harvesters state that the quality of the resource was stable in the last 2-3 years

Percentage of fisherman asked about quantities variation (A) and size variation (B) in the last 5 years



Source: Cruz et al., "The state of the fishery, conservation and management of the stalked barnacle Pollicipes pollicipes in Portugal", 2015

CURRENT SITUATION – HARVEST OVERVIEW

Through surveys to harvesters, values were obtained that help characterize the current situation of the barnacle harvest in the Berlengas.

The values used throughout this presentation were obtained through surveys of 25 Berlengas' barnacle harvesters, as well as through some in-depth interviews. These are the values we used to study our hypothesis throughout the Project.

Current Situation	*(Appendix 8)*
# Harvesters	40
Annual harvesting days	31
Average harvested kilos per day	16,40
Average sale price	29,40 €
Maximum price	80,00 €/Kg
Minimum price	14,00 €/Kg
Average harvesting cost	66,00 €/day

* Excluding extraordinary sales

Due to the diversity of values obtained from different harvesters, it is possible to infer that many are getting worse results in sales than what they could achieve.

CURRENT SITUATION – HARVESTERS' CHARACTERIZATION

Barnacle harvesting is an individual activity that depends on may factors, the most critical ones are the harvesting technique, its regular costumers, its bargaining power, and the selection in and out of water.

As it is an individual activity, harvesters behavior varies a lot, depending on many factors:

Harvest technique

- Harvest requires different conditions depending on whether it is made by diving or on the rocks;
- The ones who dive take longer and appear to show bigger profit concerns as 80% of divers does calibration vs 14%.

Costumer

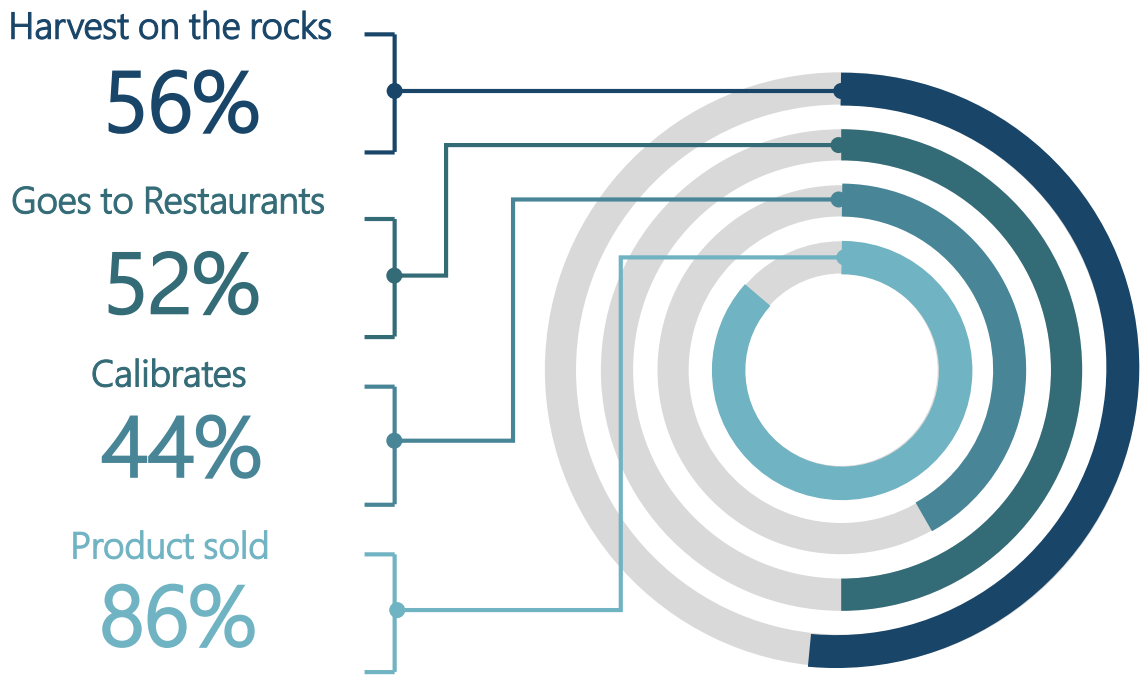
- Harvesters can sell it to middleman, restaurants or export;
- Export is unreliable and difficult to maintain (6% of total product);
- Restaurants pay higher than middleman but is costlier to sell to them as transportation needs to be included.

Selection

- After harvested the product is cleaned and prepared;
- Here is decided if price discrimination is done (calibration) or not, by doing so harvesters maximize their surplus in function on the product they already have.

Product sold

- The product comes from the sea with rocks and other impurities attached;
- After cleaned and prepared the amount harvested is different from the amount sold.



*For the entire document, the average sold quantities are 13,7 Kg (86%*16,4Kg)

CURRENT SITUATION - INTERNAL ORGANIZATION

The internal organization is divided through two associations, and some harvesters feel more competitive than others sharing or not the same resources and making the selling process unknown for the others.

As previously mentioned, there are only 40 harvesters licensed to capture goose barnacles in Berlengas. However, the level between them is almost null, as the mentality is still very competitive.

There are two associations: The *Associação de Mariscadores das Berlengas* and *Associação Nacional de Mariscadores de Mergulho em Apneia.*

AMB

Composed of all the licensed harvesters, this association exists but has few practical impact. The relation between sub-groups of harvesters is a bit hostile, so the implementation of measures becomes very difficult.

ANMMP

This association, existent at a national level, comprises a fraction of the Berlengas' barnacles harvesters, the ones that harvest under-water (diving). The harvesters who capture on the rocks and those belonging to this association, due to different practices, are very competitive.

The competitive attitude reflects itself on the processes.

Sea

The harvesting is an individual activity, where rivalry exists because each harvester has their own preferred areas and techniques, that they use as a source of differentiation.

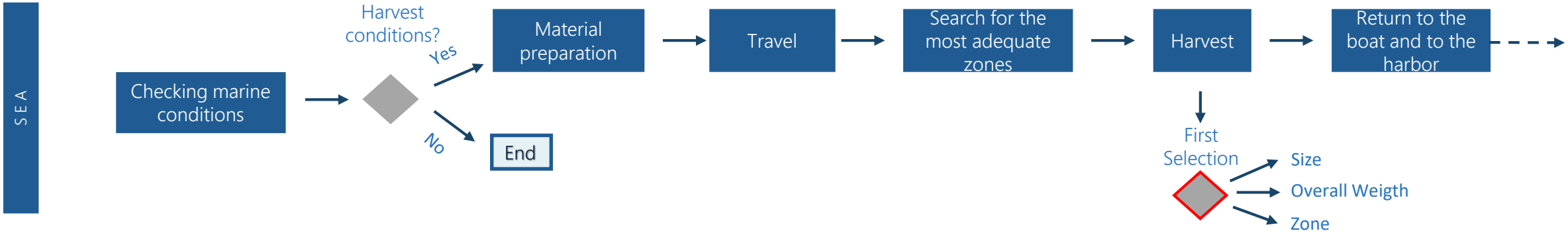
However, there are many subgroups with different amounts of individuals, that share the boat and respective costs, and sometimes even share the selection space

Sale

The selling process also depends from harvester to harvester. Some deliver all the barnacles to a trusted colleague, who makes the delivery for them, against a agreed fee, and some join all the barnacles and sell them together.
However, most of the harvesters have their own selling circuit, with long-term buyers for whom they have been supplying for a long time. There is an aura of secrecy about each other's clients, but still there is no overlapping in one another's circuits.

OPERATIONS - SEA

The sea section is were harvesters can define which product they are going to commercialize by doing the *first selection,* choosing its size and amount which might condition species sustainability.

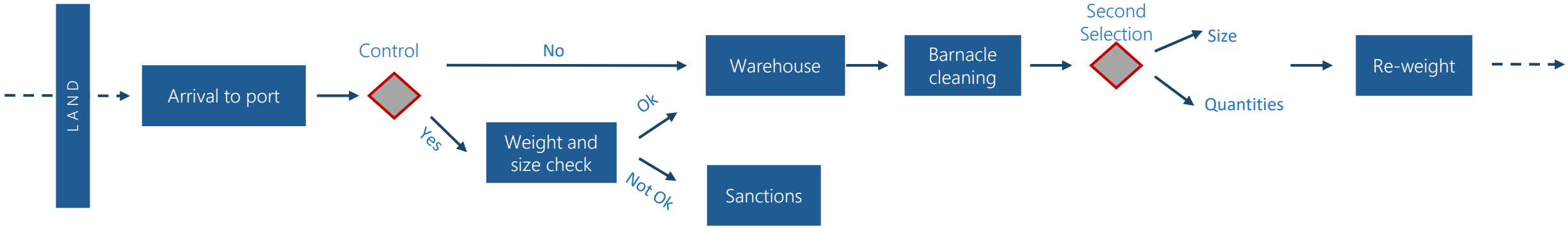


Brief Description

- Although having the possibility to harvest 105 days per year the sea usually only offers conditions on less than a third, which makes this activity very unpredictable and hard to depend on;
- Berlengas archipelago is 10 km away from coast and takes about a 20-30min boat drive to reach it. Boat costs are often split between harvesters who shared it. Often each boat represents a sub-group of harvesters that might or might not do the rest of the activities together according to each one's rules;
- **First selection** – this process is of prime importance as it is in sea that the resource is harvested, where its sustainability is being decided and where the harvesters define the quality of its product. All the harvesters affirm to be careful when harvesting.

OPERATIONS - LAND

The land section can be crucial by having a mandatory common check-point, after passing through the port each harvester goes to a certain location (variable) to do the *second selection* where it can maximize the worth of his batch.

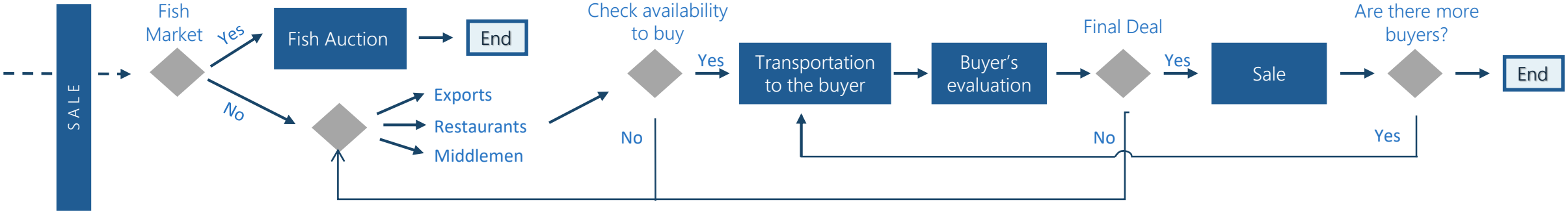


Brief Description

- Arrival to port – Peniche's harbour is the mandatory docking site for every boat that comes from harvest in Berlengas. The most effective monitoring by regulatory entities is done here, as some wait for boats to arrive to check the product.
- Warehouse – In the actual system each harvester goes for the place they have available to clean and prepare each batch. Depending on harvesters organization in sub-groups many share a common warehouse in the harbour.
- In the **second selection** harvesters select how to organize each batch according to each price/costumer at/that they want to sell to. By arranging the batches through barnacle size, harvesters can do price discrimination as they can make the whole loot worth more if they calibrate: batches with bigger percentage of big barnacles are much more valued.

OPERATIONS - SALE

The sale process is considered to be where is more secrecy. Usually, each harvester has its selling path already well stipulated as there are long term relations with clients. Here, the transportation costs represent the main cost driver



Brief Description

- Fish Auction Sale – Barnacles harvesters have a license that allows them to sell seafood outside of the Fish Auction, thus rarely or never the fish auction is used to sell Berlengas' barnacle. As costumers do not expect the sale to occur there they are not present as well. This spiral keeps prices low and gives the public fish auction *lota* a bad connotation among harvesters;
- Interest verification – Routine process of reaching to regular clients and check their availability to buy the product;
- Transportation – big cost driver in the harvester's expenses as usually they need to cover big distances to sell the product (most restaurants are located in Lisbon);
- Final Deal – Personal product display and final negotiation as prices often do not change to the same costumers, the variation is only existent when batch's quality varies immensely.

COSTS

Costs were divided into two cost classes: harvest costs, with a much variable (depending and inevitable value to afford to harvest; and sale costs where transportation to the client's place is always done either close or far away.

From surveys and qualitative interviews some information about costs was gathered:

Harvest Costs:

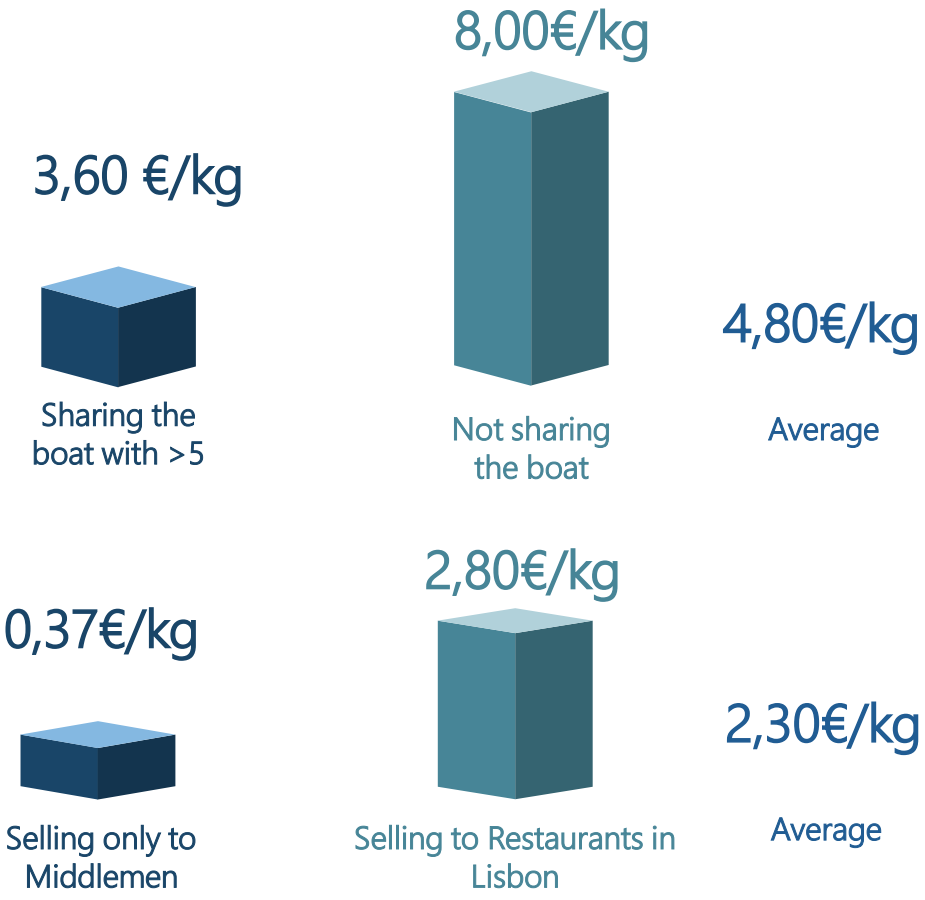
- Depending on each one's availability to share costs, boats are shared or not. In 40 harvesters there are less than a dozen boats that go to harvest Berlengas' barnacle;
- It depends on the schedule, technique used, preferred zone and will of each one;
- The boat needs to have someone on board when harvesting, which represents another cost that could be marginally decrease depending on the amount of harvesters on boat.

Sale Costs:

- To sell the product the harvester needs to incur transportation costs as costumers only buy it after they see its quality personally;
- There is a massive difference in costs if the barnacles are sold to middlemen (often close to the harbour) or if they are sold directly to Lisbon restaurants.

Other Costs:

- For this study were not included costs that are incurred for activities during the rest of the year and would exist anyway, like the renting of warehouses.



MARGINS

The main portion of the costs are the harvesting related. The selling expenses depend on the system of each harvester. The average selling price of the Berlengas' goose Barnacles is 29€/kg and the average margin is 21,9€/kg.

Average costs 7,10 €

- Average harvest associated costs 4,80 €/kg
  - Average of all harvesters
- Average selling associated costs 2,30 €/kg

Weighted average of transportation costs based on quantities sold to restaurants or middlemen
Appendix XXX

Average price 29 €

- Average price of all inquired harvesters
- Varies a lot (σ = 8,6) between harvesters, depending on:
  - Product quality (Calibration)
  - Negotiation skills
  - Buyers

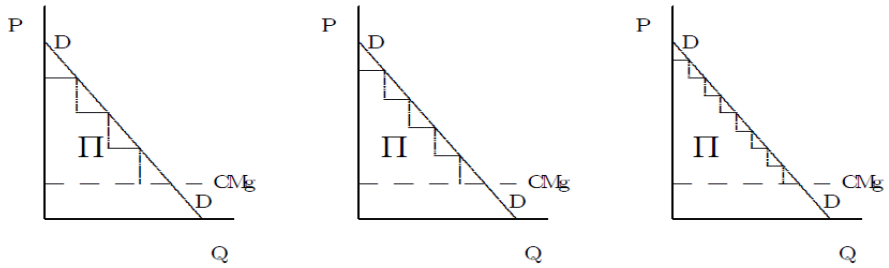
*values computed based on the information retrieved from the inquiries to 25 harvesters

PRICES – CALIBRATION VS NON CALIBRATION

According to the information gathered from inquiries, those who make calibration have higher incomes than those who do not, even if they sell more to middlemen for that purpose.

The harvesters who assume to make calibration accomplish an average price 27% higher than those who don't.

- Barnacles' price per kg varies a lot depending on many factors;
- A big conclusion from our inquires to harvesters was that the ones who **make calibration have average prices much higher than those who do not;**
- The reason is that, while the harvesters who sell a single size batch have a single price for all the barnacles, the ones who separate different sizes into different batches can obtain average prices in the minimum batch, and accomplish much higher prices in the better batch sales.



When doing price discrimination the seller can gain surplus margin from the buyer.

Type of selection	Calibration	Non Calibration	Difference	
Average price	**33,60 €**	**26,40 €**	**7,20 €**	**27%**
Maximum avg price	60,00 €	40,00 €	20,00 €	50%
Minimum avg price	27,00 €	23,00 €	4,00 €	17%

Caliber	Prices
Average Maximum	46,80 €
Average Medium	39,00 €
Average Minimum	24,55 €

"Calibration increased my average price by 10-12€ kg" - Harvester

P&LS | PER HARVESTING DAY

The current situation of a harvesting day has been separated between harvesters who do not calibrate on land and those who do. The latter achieves, on average, higher prices and margins.

WITHOUT calibration

Revenues		
Quantities sold	13,7 Kg	
Price	26,36 €	
Sales		361,09 €
Costs		
Harvesting costs	65,94 €	
Selling costs	26,36 €	
Total costs		92,30 €
Margins before taxes		268,79 €
Margin per kg		**19,62 €**

WITH calibration

Revenues			
Quantities sold		13,7 Kg	
	Bigger caliber		6,4 Kg(1)
	Smaller caliber		7,3 Kg(2)
Price		34,97 €	
	Bigger caliber		46,82 €
	Smaller caliber		24,55 €
	Sales		479,13 €
Costs			
Harvesting costs		65,94 €	
Selling costs		39,28 €	
	Total costs		105,22 €
	Margins before taxes		373,91 €
	Margin per kg		**27,29 €**

(1) 47% of sold quantities (quantities sold to restaurants by those who make calibration)
(2) 53% of sold quantities (quantities sold to middlemen by those who make calibration)

3. Analyses

3.1. Internal Analysis

3.2. External Analysis

a. Industry

b. Margins

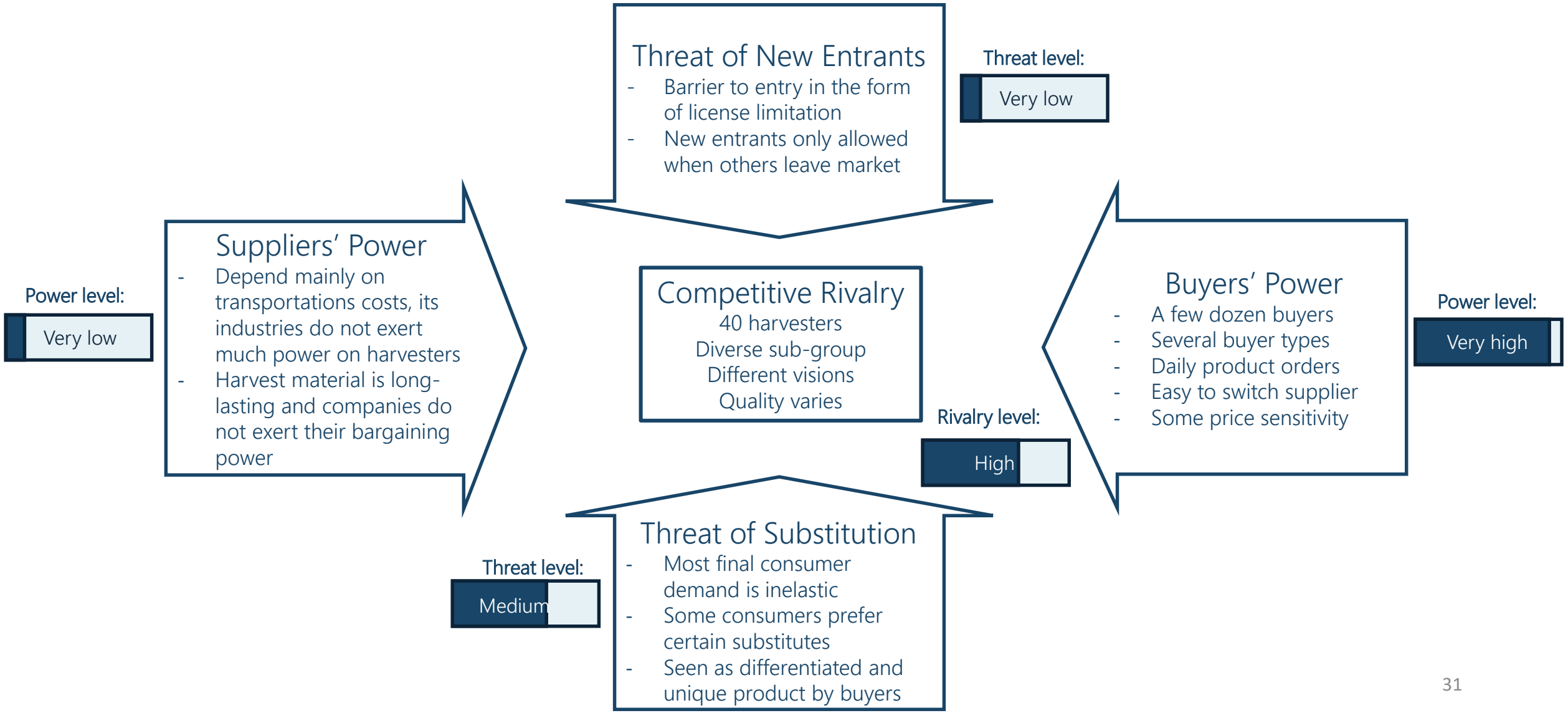
c. Perception

d. Regulations

e. Benchmarking

INDUSTRY – PORTER'S FIVE FORCES

To analyze the industry as a whole, specifically its attractiveness and long-run profitability, Porter's "Five Forces" Model was used from the point of view of the barnacle harvesters.



INDUSTRY – BUYERS' POWER

From the interviews and surveys conducted alongside stakeholders, information was gathered regarding the needs and characteristics of the product buyers.

	Middlemen	Restaurants	Exportation	Final Costumer
Prices and Margins	Offer average prices, according to the quality of the barnacle, capturing between 10 to 15 euros per kilo of the harvesters' margin.	The most reputable restaurants will sell at very high prices and capture huge margins, while the remaining will sell at lower prices yet with still significant margins.	Very high prices compared to the Portuguese reality, meaning exportation to Spain is where sale price can be higher for harvesters.	Reduced prices compared to the product's full potential. Usually only sales to friends or acquaintances
Quantities and Quality	Some harvesters leave all the product in the middlemen, while others only leave what their regular restaurants do not absorb. The quality varies, but is mostly low to medium.	The barnacle of the highest quality is directed to the most reputable seafood restaurants, while the smaller ones end up selling medium-quality product.	The quality of the product is enormous because Spain only absorbs the best product, but a large amount is needed to offset the travel cost.	Very low quantities, quality may vary but it is expected to be low.
Frequency	Some harvesters sell mostly to middlemen, while for others only when it does not pay to go to Lisbon and the restaurants on the circuit are served.	In the end, almost all the product ends up in restaurants, either from harvesters or middlemen. Therefore, the usual restaurants will always have product in harvesting days	Exportation is sporadic, many harvesters hesitate to put the barnacle in Spain as this means abandoning the usual customers and losing their confidence.	Sales are sporadic and many harvesters hesitate to sell to family and friends as they may be losing margins elsewhere.
Cost of Sales	Middlemen represent very low selling costs because they are present near the harvesting zone.	Moderate transportation costs for the reputable seafood restaurants, while the smaller ones have no such costs due to closeness to the harvesting area.	Costs depend if there is own transportation or not. If so, these are very high, but some middlemen place the barnacle in Spain, lowering costs for harvesters.	The costs are minimum, as the harvesters will not make a big travel to sell directly to final consumers

INDUSTRY - THREAT OF SUBSTITUITION

With the interviews to the restaurants and final consumers we conclude that the Berlengas' barnacle suffers from some competition, with the existence of other types of barnacle and other seafood in the market.

Barnacle from the rest of the Portuguese Coast

Usually originated from the south or centre of the country, these barnacles are demanded and sold all year. Many people do not recognize differences between origins and consume what is offered, making this product a close substitute.
This barnacle has less supervision which may lead to devaluation of its quality, so a higher perceived quality for the Berlengas' barnacle would mean a lower competitive threat.

High competition threat

Barnacle from Senegal, Morocco and Cape Verde

This barnacle has a large size like Berlengas', but it is perceived as having worse quality due to its lack of taste. It enters the market at lower prices, attracting the consumer due to its good visual and attractive price. The competitive threat is high because it is a close substitute and also because it can be mistakenly sold as Berlengas' barnacle, affecting its reputation of superior taste and quality.

Medium high competition threat

Barnacle from Spain

The Spanish barnacle is seen as having very good quality, with average prices much higher than the Portuguese ones. Despite this, it is not common to find them in the Portuguese market, only as a way to drain stocks. The competition threat is therefore low, as it is not expected to take any market from the Berlengas' barnacle

Low competition threat

Other seafood

As the barnacle is an expensive product of volatile quality, many costumers only consume it in reliable restaurants, and in its absence the consumer can request other seafood. Some of the substitutes referred to in the surveys were clams, *canilhas*, *bruxas*, prawns and brown crab (*sapateira*), among others. Moreover, many consumers indicate they perceive other seafood as complementary goods instead of competitors.

Low competition threat

INDUSTRY - VALUE CHAIN

Usually from barnacle harvesting to consumption several stakeholders are present. By observing the prices each practices, we conclude that most of the value of the product is retained in the restaurants.

Percentage of total value	30-35%	0-15% *Based on information gathered from harvesters	60-70%	
Main Activities	- Harvest - Selection - Establishing contacts - Transportation - Sale	- Purchase - Establishing contacts - Transportation - Re-sale	- Purchase - Preparation for final sale - Re-sale	Consumption

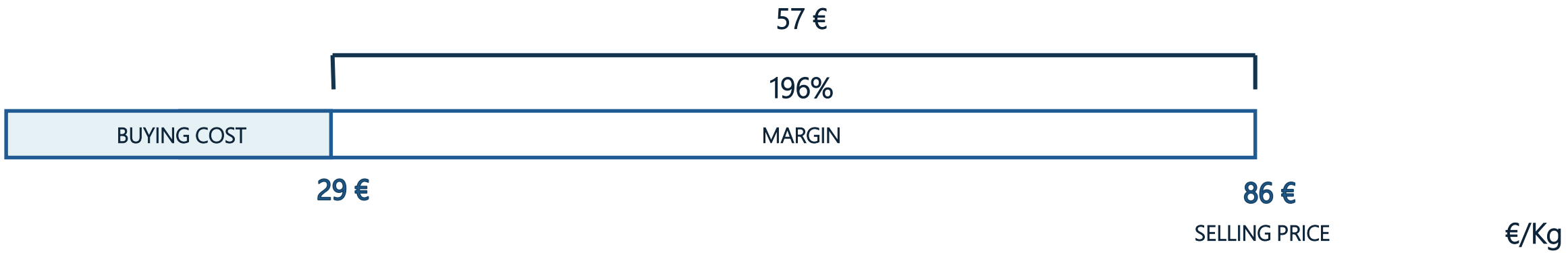
Bigger margins in the restaurants are due to:

- Greater bargaining power than most harvesters
- Selling to the final costumer who has little price sensitivity

MARGINS - RESTAURANTS

The average buying price for restaurants is 29 €/Kg, to which they add, on average, 57 € to resell to final consumers

Restaurants added value is mainly due to being the channel towards final consumer, as this dish's preparation is simply boiling it.



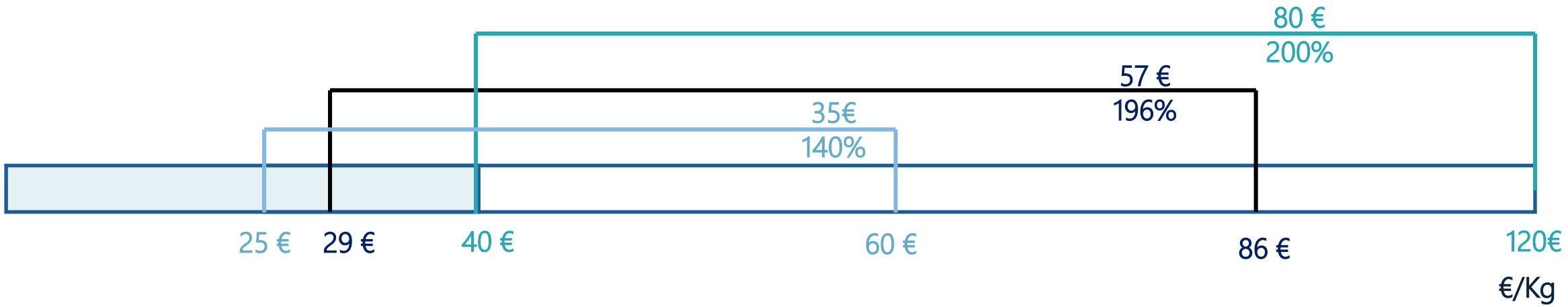
Restaurants' margin

- Restaurants and harvesters usually maintain long-term relations, being the prices stable except if the quality of the batch highly varies;
- From the surveys was extrapolated that the selling price to restaurants is on average 29€;
- From our sample, collected in one day, the average restaurant selling price was 86€.
- Their selling price fluctuates immensely depending on the intentions and desired reputation;
- Normally restaurants put a mark up of 150-200% over the buying price, offering great margins;
- Restaurants in Lisbon are the ones who usually pay more, as the prices they practice are higher as well.

*values obtained from direct contact with 11 restaurants

MARGINS - RESTAURANTS

There is a great disparity in both the selling price to restaurants and to final consumers. The restaurant margins tend to be higher the higher both these prices are.



Price variation

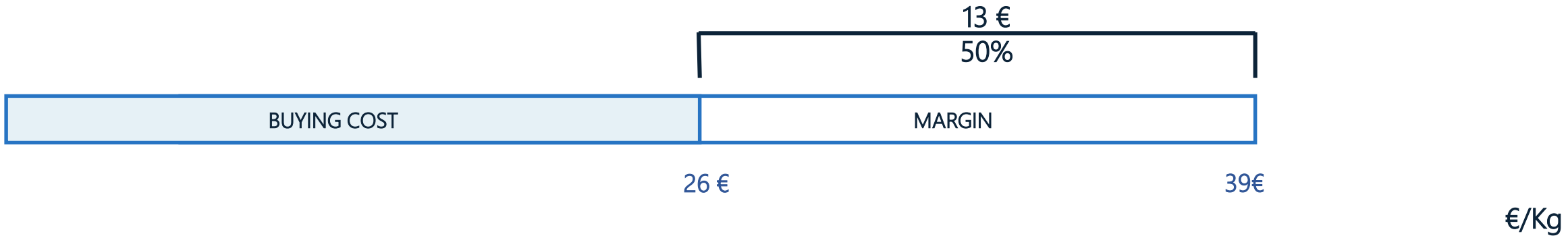
- The selling prices to restaurants vary because of the negotiation skills of each harvester and the quality (size) of its product;
- If it is, logically, considered that buying and selling prices of Berlengas' goose barnacle are proportional, the restaurants make higher margins on the more expensive Goose barnacles they buy from harvesters;
- When a batch's quality is above average it ends up in the most known seafood restaurants, places where it can be sold at a higher price to the final consumer;
- Restaurants' final selling prices of the Berlengas' goose barnacle vary from 60€/kg to 120€/kg.

*values obtained from direct contact with 11 restaurants and inquires to harvesters

MARGINS – MIDDLEMEN

Although the route of the intermediary is still not well known, the interviews indicate that the intermediary makes a margin of 10-15 € / kg when selling Berlengas' goose barnacle in Portugal.

The middleman is usually a company that sells other type of seafood and adds the barnacle to the whole product portfolio they will sell. Its added value is mainly due to transportation and owning a vast contact network.



Buying price

- Depends on the settlement (formal or informal) between harvester and intermediary
- The harvesters sell on average at 26€/Kg to intermediaries
- In case the resell is made to Portuguese restaurants, the intermediary adds 10 to 15 €*.

The middlemen absorb margins that could be part of harvesters' income.

*Based on interviews to different stakeholders

PERCEPTION – FINAL CONSUMER

Through in-depth interviews and surveys to random people leaving seafood restaurants we tried to understand the image of Berlengas' barnacle from the final consumer point-of-view.

The **main research objective** of the interviews and surveys performed to consumers was to understand their behaviors towards the Berlengas' barnacle.

The **methods used** were a junction of six in-depth interviews and thirty surveys to consumers from diverse locations, backgrounds and age groups.

Main conclusions:

- A portion of consumers goes to seafood restaurants **specifically for the barnacles**, and if there aren't any they purchase another seafood, the choice for which may vary. Regardless, a slim majority does not go on purpose for the barnacles themselves and they are often chosen on the spot; *(Appendix 10)*
- The most important characteristics in the barnacle for the consumers are **taste and freshness**, both having been unanimously mentioned by the respondents. Size, origin and the harvest sustainability were occasionally mentioned, while size was not at all mentioned or considered as a sign of quality; *(Appendix 10)*
- There is **low price sensitivity** and many consumers revealed not having notions of the exact prices they purchase the product for; *(Appendix 11*
- Many consumers would be **willing to pay more for a certification** of Berlengas' barnacle as a sustainably harvested product; *(Appendix 11)*
- Insights vary regarding the Berlengas' barnacles, with **many recognizing it** and **a few even choosing it as their preferred one**, still it was not known by a significant part of consumers. *(Appendix 12)*

PERCEPTION – RESTAURANTS

Restaurants know that the Berlengas' goose barnacle has more value than its competitors, taking the opportunity to charge more for this product. However, harvesters are not paid accordingly.

Most of the restaurants that sell it distinguish the Berlengas' barnacle from remaining in the menu itself, taking advantage to charge around 30€ more for its origin.

Restaurant	Normal	Berlengas
Cais ao mar	49 €	98 €
Viveiros do atlantico	55 €	-
7 mares	-	80 €
Mar do inferno	63 €	110 €
Buzio	60 €	-
O Relento	60 €	90 €
Nune's	-	95 €
Cervejaria do Lis	-	60 €
5 Oceanos	78 €	-
Mirandum	50 €	65 €
Mar e Mar	60 €	90 €
Average	**59 €**	**86 €**

- Through telephonic or face-to-face contact on one day after harvesting at Berlengas, we got information about restaurants' selling prices of gooseneck barnacles. While a few only had barnacles from one region, many had them from two, making price discrimination.

- On average, the Berlengas' barnacle price was 86€, while barnacles from other regions had a average price of 59€.

- From the restaurants who had two types, the average difference was **34€** - $\sum_{i,j=1}^{N} \frac{(Pi-Pj)}{n}$, where i and j represent Berlengas' barnacles and normal barnacles, respectively.

Restaurants' sale price	Berlengas' Barnacle
Average sale price	86 €
Difference to other barnacles	34 €

REGULATIONS

Currently, inspection goes through several organizations that, due to a lack of means, cannot act as they wanted in order to ensure the sustainability of the harvest.

Rules in the BNR

Recreational	Not allowed
Maximum	20 kgs per day
Size limit	23 mm
Licence limit	40 licenses
Days allowed	~100, when not in Closing Period

Impact of Current Supervision

A study carried out in 2013 by the University of Évora revealed Berlengas harvesters' perceptions of the way the supervision is held, and their answers reflected the idea of it being insufficient. More than half would claim that harvest without license or above the 20 kgs limit happens 'sometimes' or 'most times', with close to half believing there is harvesting on closing season as well. *(Appendix 3.2 D)*

Supervision Process

Supervision is divided among several entities depending on the action and the space in which it takes place. The authority with jurisdiction for the BNR is the **ICNF** (roughly translated to *Institute for the Conservation of Nature and Forests*), given its status as a nature reserve, for which the aim is to promote the management and safeguarding of marine resources. However, matters regarding the vessels in the area such as safety of navigation, respect for the necessary boat conditions and licenses are dealt by the **Maritime Police**, since they have jurisdiction to inspect at sea. With 13 human elements, of which 7 to 8 are available, the Police makes irregular trips to the Berlengas, perhaps weekly, an amount that is not enough for a fully effective supervision. The **UCC** (*Unit of Coastal Control*) also performs coastal control, controlling and supervising vessels, passengers and their cargoes.

Once the boat docks, the jurisdiction becomes part of the **DGRM** (*Directorate-General for Maritime Resources*) who also do weighing and certification of compliance with the law, despite having no regular coordination with the Maritime Police. Once the products reach the restaurants, the certification of origin and quality belongs to **ASAE** (*Authority of Economic and Food Safety*), as the administrative authority on food safety.

Each entity tries to fulfil its obligations with the means that they have, which are usually insufficient, with almost null coordination between the several entities involved. The key to sustainable resource management would lie in an effective monitoring system, in which means are sufficient in every jurisdiction, with cooperation between them if needed, so that the rules can be effectively applied.

Source: Cruz, T et al. (2016) *PERCEBES - Gestão, Ecologia e Conservação do Percebe em Portugal*.

BENCHMARKING – BAIONA

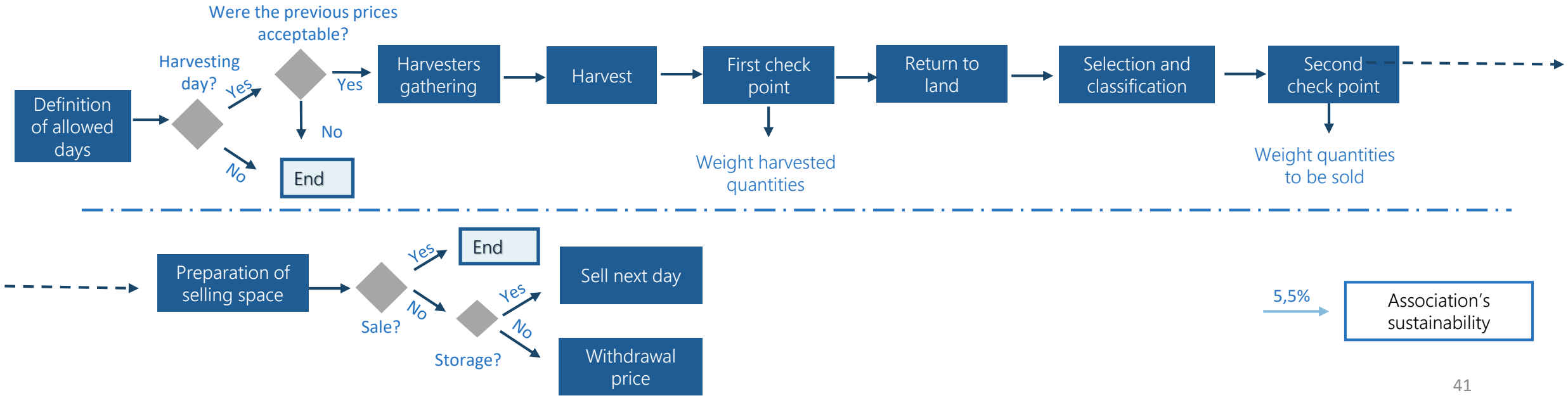
The normal process of Baiona works on the basis of union between harvesters. All after-sales tasks are carried out together, with well-defined rules and supervision.

Overview

In Baiona (Galicia, Spain), a group of goose barnacle harvesters created a co-management system in 2002, following a noticeable degradation in the state of the resource caused by the Prestige oil spill. This case led to a successful valorisation of the product and is often used as an good example to be replicated. The process is based on the defence of harvesters' interests, with well-defined rules in the harvest, selection and sale processes. For the organization to be sustained, the harvesters contribute with a percentage of the sold product. Thus, it is an example of how a gathering of the harvesters through common rules can help achieve common goals. *(Appendix 13)*

"Centralizing product selection, classifying it and selling it at a common point improves control and increases sales prices."
Beti Nieto, WWF Spain

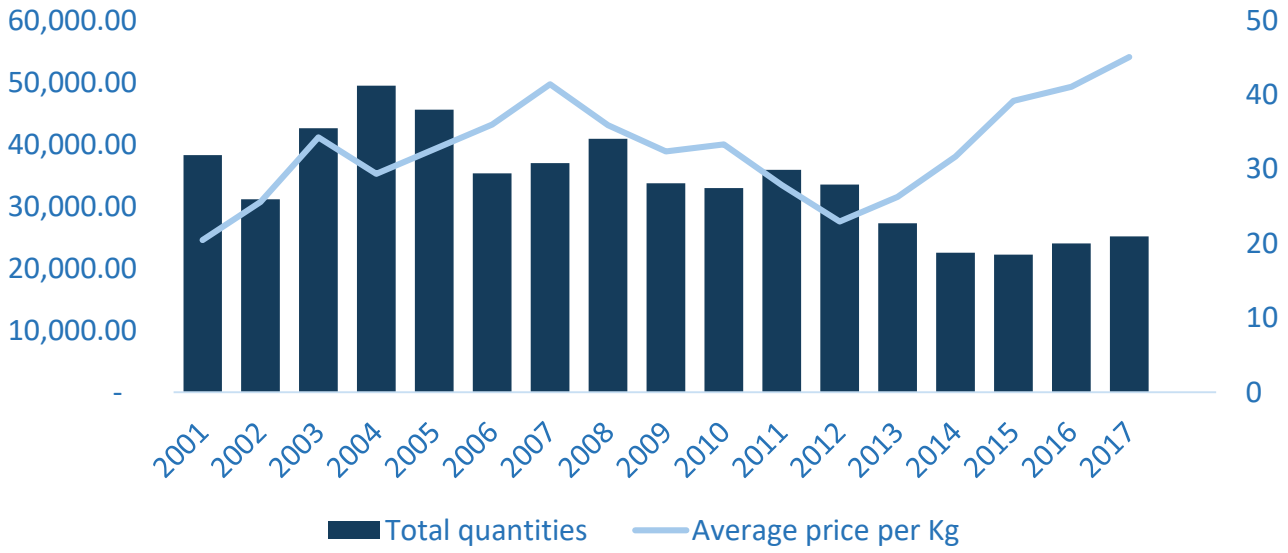
Operations



BENCHMARKING – BAIONA VS BNR

The harvest of barnacles in Baiona and the Berlengas is not completely similar, however we can observe that since 2001 in Baiona the quantity sold declined 52% and prices rose 120%.

Baiona



Compound annual growth rate 2001-2017				
	2001	2017	Total variation	CAGR
Quantities	38 263	25 173	-52 %	**-3 %**
Prices	20,47	45,07	+120 %	**+5 %**

Comparison Baiona vs Berlengas:

Per year	Baiona*	Berlengas
Harvesting day	108	31
Kgs harvested	28 596	20 790
Nº harvesters	~70	41
Annual revenue	966 316 €	611 243 €
Revenue per harvester	13 941 €	12 454 €

*average data from 2008-2017

Conclusion: Although the number of days in Baiona are three times higher than in Berlengas, the harvested quantities are only 40% superior.

Data extrapolated from: Xunta de Galicia - Consellería do mar. (2018). Obtained at pescadegalicia: www.pescadegalicia.gal

BENCHMARKING – BARCELONA'S SONSO

In Barcelona, the sonso fishery's co-management committee has also proved possible to reduce the quantities and increase the price per kg.

Sonso is also known as the Mediterranean sand eel and is highly appreciated as food in the Catalunya region.

Sonso Co-Management:

Sonso's fishers in Barcelona were able to form a Co-Management system as they asked EU for financing, being implemented in 2013.

Impacts were immediate on the level of fish valorisation and quantities decline.

By 2014 quantities fished declined more than half as the resource was being valued 3,6 times more

Sonso is an example of how it is possible to increase yields through sustainable management measures and by the reduction of animals fished

Before Co-Management 2011 vs Co-Management 2014

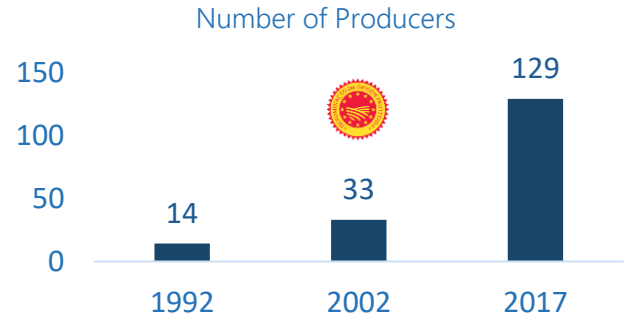
Total quantities fished 1600 ton – 579 ton	-65%
Total fishery value 1 200 000€ - 2 660 468€	120%
Average price per kg 1,00€/kg – 4,60€/kg	360%
Harvest income per year 60 000€/year – 111 000€/year	85%

Source: Pulido, M. (2015). Comité de co-gestión de la sonsera: un nuevo modelo de gestión es posible MedArtNet-España.

BENCHMARKING – CARNALENTEJANA COOPERATIVE

The system that Carnalentejana uses to organize itself has increased the value of cattle production: by having a single sales representative that guarantees the protection of their interests and by certifying the entire production process.

In 1992 Carnalentejana created a joint-stock company involving dozens of Alentejo's breed beef producers.



*introduction of P.OD certificate

1 Producers

- Are the reason for the existence of society, as measures always have their well-being in consideration
- All the producers are subject to certification in order to guarantee the product's quality.

2 Carnalentejana

- Purchases the bovine from producers at a semi-fixed price, defined periodically
- 5% margin used for the sustainability of the structure. Without the brand prices would remain low.

3 Market

- The intermediaries were cut out, ensuring greater margin, better quality and freshness of the product
- Sale made usually made through fixed price contracts.

Carnalentejana works for the interests of producers: it was created to generate more income, increase their bargaining power and give them more visibility in the market.

AGENDA

1. Methodology
2. Background
3. Analyses
4. Implementation
5. Limitations
6. Personal Reflections
7. References

VALORIZATION

The project objectives will be accomplished through the creation of a certification system and changes in the selling process. To all that, a better organization between harvesters is crucial.

2. Certification

Create a certification system that:

- Guarantees the origin of the product
- Increase awareness and interest of the buyers

1. Organization:

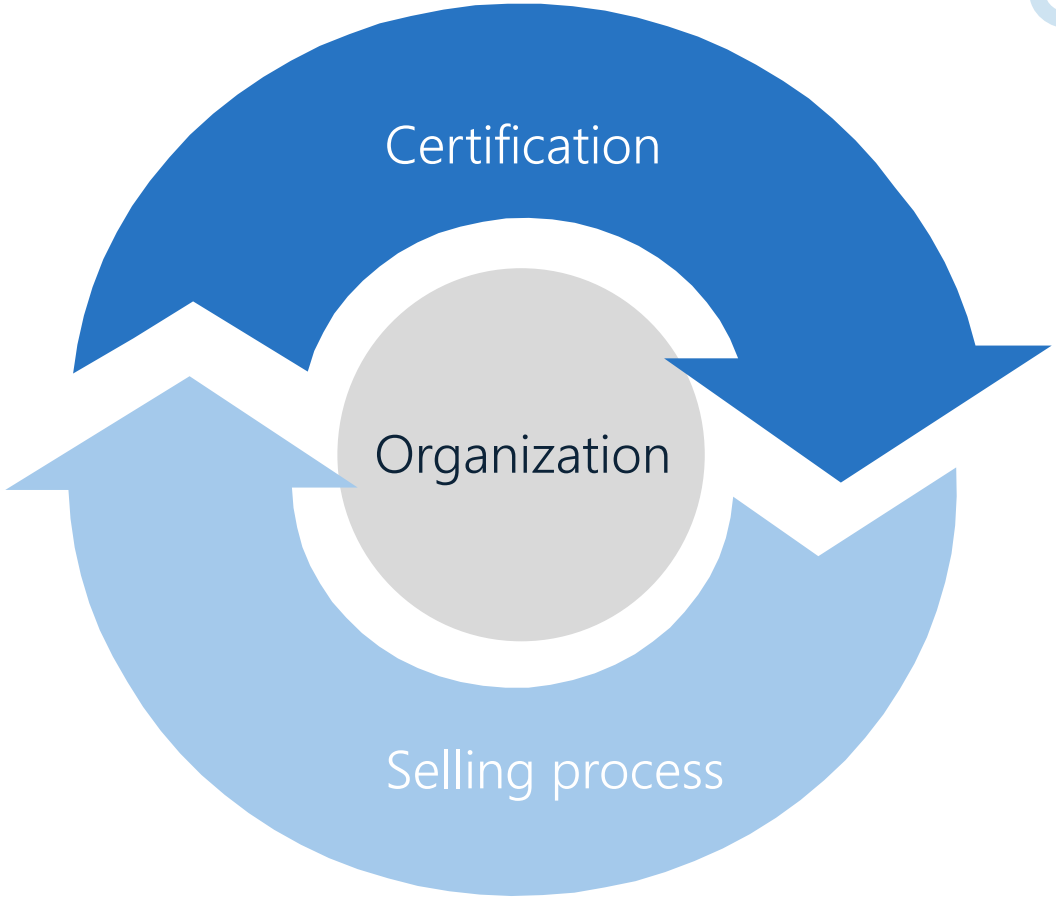
Through the existence of a structure that can:

- Control harvested and sold quantities
- Promote a better planification of the catch process and cohesion between harvesters
- Enable certification and a smoother selling process

3. Selling process:

Alter the selling process to:

- Increase the bargaining power
- Cut distribution costs
- Control offered quantities



4. Implementation

4.1. Organization

4.2. Certification

4.3. Sales

4.4. Outline of Recommendations

ORGANIZATION – VRIO ANALYSIS

The attributes of the Berlengas' barnacles fit into what the VRIO framework considers the key to achieve competitive superiority. However, better organization is needed to capitalize on those attributes.

The VRIO Framework examines the competitive advantages of resource value and internal organization.

Attributes	Description
Value	The resource has an overall value that most competitors do not have. However, restaurants absorb most of the margin as they are the bridge to the final consumer.
Rarity	The product is seen as unique and only 40 harvesters are licensed. Moreover, the sea makes the capture unpredictable, making it even more rare.
Imitability	The Berlengas' barnacle is different from the ones from the rest of the coast due to the periods of closure difficult to apply elsewhere. However, there are physically similar barnacles from other origins.
Organization	Harvesters are not organized in the best way to capture the maximum value. *(Appendix 16, 17)*
Competitive Superiority	Better organized harvesters can profit from a long-term competitive advantage: hinder imitability, increasing rarity and consequently capture more value.

Source: VRIO framework - mechanism created by J. Barney and W. S. Hesterly

ORGANIZATION - CENTRALIZED SELECTION - COMPARISON

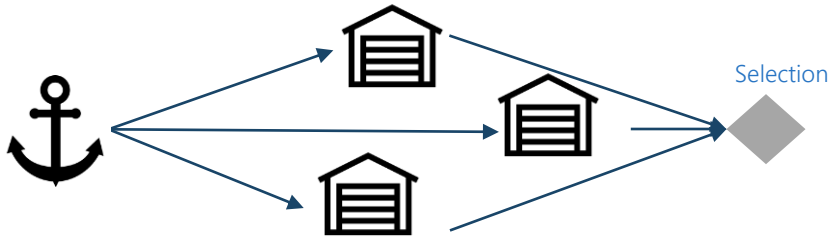
The barnacle cleaning and selection process can largely define the final value obtained by the harvesters because here they can prepare batches for price discrimination.

Centralized

With a central selection system, there would be a warehouse in the port of Peniche where the harvesters would clean and select the barnacles immediately upon arrival on land.

- ✓ Sharing of information and incentive to improve practices
- ✓ Facilitating the control of collected quantities
- ✓ Promoting union among the harvesters
- ✓ Eliminating the need to travel to own spaces
- ✗ Docapesca will have to be paid for the use of warehouses

Descentralized



As it is currently done, each harvester departs from the port of Peniche to their own space (warehouse or garage), where the cleaning and selection of barnacle to sell is made.

- ✓ Privacy in the process
- ✗ No mutual incentives to improve quality
- ✗ Extra itineration costs
- ✗ Harder to pack product with ordinary wrapper
- ✗ No quantity control for the sale

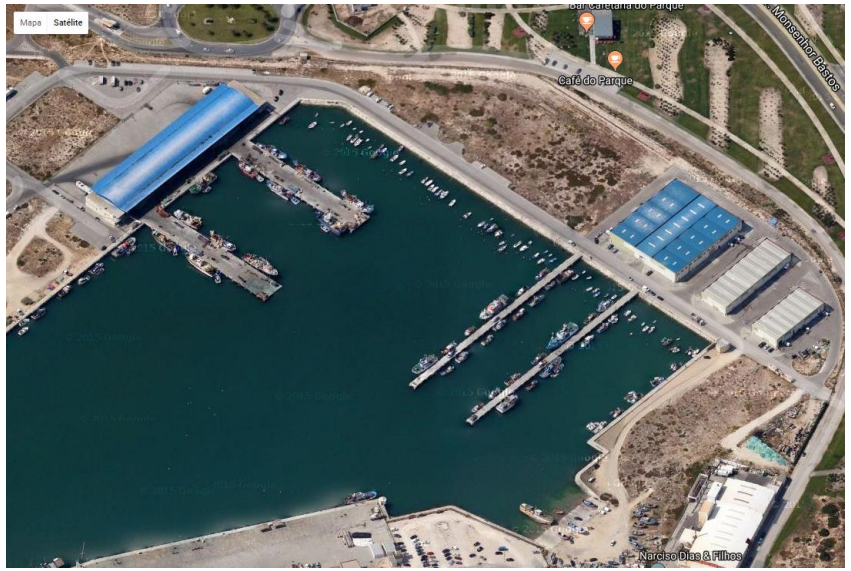
ORGANIZATION - CENTRALIZED SELECTION - LOCATION

The existence of warehouses in the harbour, where harvesters must pass by, added to Docapesca's availability to provide them, make it the most ideal zone for a centralized selection.

For changes to happen at certification or selling levels, it is crucial to have a better organization, physically translated into a common space where all harvesters pass through. Only then will it be possible to concentrate all the Berlengas' Goose barnacles. Certification requires a control of quantities and quality, and to provide a place where all the harvesters can clean and select the product is a good incentive for that to happen.

After the harvesting is done, all the harvesters arrive to the **Peniche harbour**. It is the optimal point to have a centralized place to implement measures that require the presence of all harvesters because:

- The law requires that all boats dock in the harbour
- There are several available spaces
  - Docapesca, the owner, showed availability to provide one warehouse for a reduced fee
- A few harvesters already do the barnacles selection at their own warehouses in this same harbour



Making it mandatory to select the barnacles, or even just pass through the central space to weight the harvested barnacles would bring great advantages and open doors to important measures such as certification.

ORGANIZATION - CENTRALIZED SELECTION - ADVANTAGES

Making barnacles selection in a common space facilitates the quantities' control, enables the packaging and certification of the product and also promotes union between the harvesters.

As the selection and cleaning of the barnacle is a phase of the process that all the harvesters must make, and the harbour of Peniche a place where all of them pass, the existence of a space to make a centralized selection could bring several advantages.

Advantages	
Controlling harvested and to be sold quantities	- Easier to apply any type of control, making it mandatory to weight both quantities; - Access to this information is important since it would be possible to establish a link between the fishing effort and the state of the resource.
Having a space that promotes cohesion and knowledge sharing	- Space can serve as the Co-Management Committee's headquarters and promote training, educational sessions and meetings during the closing period; - As harvesters see the results of the colleagues who do better, it encourages best practises, resulting in a better selection in water or in land, influencing the state of the resource and the price.
Creating possibility to certify the Berlengas' barnacle	- Gaining the possibility of packaging and labelling. - Making all the barnacles pass through the same place is the only way to certify it, making sure that all the labelled barnacles are in fact harvested in Berlengas

ORGANIZATION - CENTRALIZED SELECTION - NECESSARY MATERIAL

A centralized selection requires change, and therefore initial investment.

In addition to a monthly income, to make the selection in a centralized space is necessary the initial acquisition of some equipment to be able to complete the process in the space:

Scales

In order to weigh both the quantities collected and those for sale

Refrigerators

The space would need to have fridges to make it possible to store the barnacles

Stainless steel countertops

Important so that there is enough room for at least fifteen harvesters to make the selection simultaneously

Packing machine

Automatically fill bags with desired quantities of barnacles, making it easier to create different size batches

Labelling machine

To create labels with batch information, as well as a possible certificate

Product	Quantity	Cost
Storage and selection		
Scale	2	130€
Stainless steel countertops	15	2 400€
Refrigerators	2	4 000€
Sub-Total		**6 530€**
Certification		
Packing machine	1	8 000€
Labelling machine	1	170€
Sub-Total		**8 170€**
Total		**14 700€**

*It is expected that there will be public financing for this type of investments

4. Implementation

4.1. Organization

4.2. Certification

4.3. Sales

4.4. Outline of Recommendations

CERTIFICATION/BRAND - INTRODUCTION

As there is recognition of Berlengas' barnacle by consumers and restaurants, and price of second sale being much higher, a brand could be formed to capture part of that margin.

The creation of a brand will only be possible if there is recognition and certification, to make sure the product is indeed coming from Berlengas

There is already recognition from the restaurants, who end charging higher prices, and from the final consumers.

- The product is already known for its superior quality – Recognition exists *(Appendix 12)*
- To be certified all the Berlengas' Barnacle needs to have a common checkpoint before sale that can Grant its quality and its origin, enabling the possibility to reach the cliente branded as "Percebe das Berlengas"

Recognition

1

Both the restaurants and consumers are already aware that the Berlengas' Barnacle is different.

Certification

2

If the origin, quantities and so the quality, get certified the product might gain value.

Brand

3

With the recognition and by being certified arises the opportunity to brand the product as a symbol of rarity, quality and sustainability.

CERTIFICATION - RECOGNITION

Certification would take advantage of the already existing product recognition.

Arguments	
Final consumer's recognition	The Berlengas barnacle's quality is already seen by a significative part of the audience: - In 40 interviewees, 13 recognize the product - In 20 interviewees, 6 indicate Berlengas as the place with the best Barnacles
Consumer's willingness to pay	- Consumers see goose barnacles as a luxury product - The results of our surveys show that consumers do not have the exact notion of how much they are charged to consume it. - Consumers, in general, are willing to pay more if the harvest and the product have some sort of certification
Bigger margin absorption	- Restaurants already differentiate Berlengas' goose barnacle from the rest of the coast's, charging more for the first one - The average price of the Berlengas' goose barnacle in restaurants is around 86€/kg - Restaurants sell it for 30€ higher than the other goose barnacle and buy it with an average difference of 10€

From here we can infer there is potential to capture a bigger margin from the restaurants, by certifying the product quality and origin.

CERTIFICATION - OBJECTIVES

In order to meet certification's objectives the possibility to apply for private certificates was analysed comparing it to the hypothesis of being certified by its own brand.

The underlying idea of this recommendation is to add value to the product by certifying it, making sure that all the product is of a certain quality standard and, if possible, that the practices were the best for the resource sustainability.

Objectives	Analysed solutions
Transmit its uniqueness and superior value	1- To implement on the Berlengas Goose Barnacle fishery an existent certificate from private entities or non-profit organizations, such as the Marine Stewardship Council or the Protected Designation of Origin from the European Union.
Ensure that it is in fact harvested in Berlengas	
Minimize falsifications – Other goose barnacles that is sold as Berlengas'	2- To create a own brand of Berlengas goose Barnacles, with an associated and customizable certificate. Promoting the controlling quantities, quality and product origin.
Create willingness to pay more	

CERTIFICATION - COMPARISON OF OPTIONS

The MSC, the CCL (from DocaPesca) and the Protected Denomination of Origin have certain characteristics that do not make them suitable for this product. A solution is to create a own type of certification.

After careful analysis of all possibilities, and with the Steering Committee guidance, it was decided that it only makes sense to focus on an own certificate. Eventually, the fishery could proceed for a PDO in a later stage.
(Appendix 18, 19)

Hypothesis	Characteristics			
	Entry Fees	Maintenance costs	Added Value	Decision
MSC	●	●	◔	No
P.D.O	○	◔	◔	In a later stage
Own brand	◔	◔	◔	Yes

● High ◔ Medium - HIgh ◔ Medium - Low ○ Low

CERTIFICATION - BRAND: INSTRUMENTS

The certification would exist together with a sealed pack of Berlengas' barnacles to make it difficult to falsify. In addition, each restaurant that sells the product would be identified with a seal that would guarantee it.

As the brand would promote the certification of the Berlengas' goose barnacle there are some instruments that would help to increase perceived value and bargaining power.

Certificate

The certificate will accompany all the packages of Berlengas' barnacles. It should be clear and visually attractive, with important information regarding the batch. As in Vila do Bispo, it is important that the certificate has:

- The logo
- Identification of being a Natural Reserve and UNESCO's
- Batch information
  - Weight and size
  - Expiration date

Packaging and tag

A net package is key to the development of the brand, as it is the only way to make sure that the goose barnacles come from the Berlengas.

The main objectives of the package are:

- To work as symbol of the certification
- Minimize the existence of falsifications
- Ensure that all the packaged goose barnacles are in fact from Berlengas

Stamp "Amigo das Berlengas"

To complement the brand and create more awareness, a stamp should be created for seafood restaurants, who sell Berlengas goose barnacles to have on its door.

The main advantages would be:

- Attract more consumer's interest
- Give restaurants a reason to pay more
- Make it easier for ASAE to inspect restaurants and detect falsifications

PERCEBE das BERLENGAS
RESERVA NATURAL

Source: Gaspar, M., et al. (2016). Guia de boas práticas para a apanha do perceve na área do PNSACV

CERTIFICATION - BRAND: PROMOTION

The Berlengas' barnacle brand should convey important values to the final consumer, such as product rarity, sustainable harvesting, Berlengas quality, and importance to the harvesters' community.

The brand promotion should focus on aspects that characterize the product and the consumer would value, creating willingness to pay more. The "conceptual brand" Berlengas' barnacle already exists in some consumers minds, being therefore necessary to create visible attributes in order to differentiate the product and make it recognizable.

Rare and Unique:

- The harvesting of goose barnacles is a dangerous and fierce activity;
- Berlengas' goose barnacle is only available few times a year due to ocean's ferocity

Sustainable Harvest:

- The entire harvesting process has the sustainability of the resource in consideration
- The Co-Management committee strives to ensure resource's good quality

Reserva Natural das Berlengas – Unesco World Network of Biosphere Reserves:

- The reserve's water quality and its lack of exploration attribute rare qualities to the Berlengas' goose barnacle
- Berlengas are a part of the Unesco World Network of Biosphere Reserves.

Harvester Community:

- The resource is managed by a limited group of harvesters that conduct the activity and its rules
- The harvesters are united to protect the resource and to offer to the best goose barnacle possible to the costumer.

CERTIFICATION - BRAND: RISKS

The creation of a brand has high risks associated with damages caused by irregular product quality and barnacles from other areas posing as from the Berlengas.

Risks	Mitigation
Not maintaining consistency in the services provided	- Making sure the harvesters realize the extra responsibility of maintaining the quality - Foster long-term relationships between the brand and the buyers, as it happens in the current system
Packaging vulnerability	- Multiplying the distinction elements: by having a packaging and a tag increases the difficulty of other goose barnacles entering the market as Berlengas’;
Goose barnacles form elsewhere damaging the brand image	- Guarantee that restaurants selling this barnacle are identified as such (e.g. with stamp). - Communicate that only identified restaurants have true Berlengas' barnacle
Not all the harvesters adhere	- Encourage a bigger cohesion within the harvesters’ group - Create a system of organized and centralized sale

4. Implementation

4.1. Organization

4.2. Certification

4.3. Sales

4.4. Outline of Recommendations

SALES - SCENARIOS

The sales systems considered were the cooperative system, realizing a centralized sale in auction and maintaining the sale as it is done today. However, this last scenario was discarded for not being within the objectives of this project.

As the main objective is to increase the profitability of the harvesters by creating incentives for a more sustainable harvest we considered three scenarios:

A

Cooperative System

- Creation of a cooperative with a commercial department
- The cooperative buys the barnacles and re-sells them being a much more powerful negotiator

B

Sale in Dutch/descending Auction system

- Gather all the barnacles in a central location for selection and control and sell them in the same place
- Use the same system used in Baiona
- The sale would be done with the supervision of an exempt party

C

Actual sale process with product certification

- Each harvester would keep its commercial circuits
- The harvesters would benefit from the existence of a certificate/brands
- **Not compatible:** It would endanger the long-term increase of price as competition would still exist

All the scenarios are compared with the current situation

SALES - OBJETIVE MARGINS

With the proposed changes to the sale process, income is expected to increase through a decrease in selling costs and an increase in the sale price to restaurants.

All the scenarios are studied in two perspectives: 1- Reduce individual costs and 2- Increase average selling price, being the baseline to ensure a 100% margin to the restaurants.

Costs

A reduction in costs would already impact significantly the margins per kg:

- The most relevant cost is the dislocation cost. A trip to Lisbon costs between 35-50 €
- These costs are easily reduced if the harvesters join and split them.

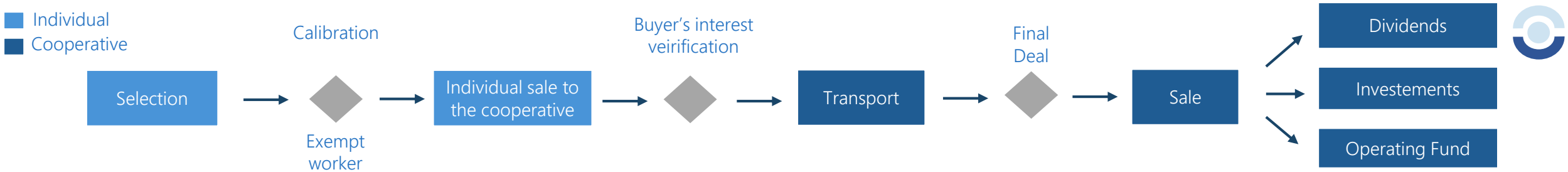
Prices

The restaurants should be willing to pay higher prices as it was observed that:

- Restaurants will maintain high margins even buying at a higher prices.
- There is always demand for Berlengas' goose barnacle;
- The consumer does not show to be sensible to price

SALES - SCENARIO A: IN COOPERATIVE SYSTEM

A cooperative system would be created or deepened, as it would be in charge of selling the barnacles (with bigger bargaining power) and ensure safe and higher revenue stream to the harvesters.



1 Sale to the Cooperative

- Sale the goose barnacles to the cooperative after selected
- Pre-defined price per caliber
- Prices that assure a higher profitability to each harvester
- There is a need to have someone unbiased to decide in which caliber fits each batch
- It should not be mandatory to sell to the cooperative

2 Definition of the buyers and route

- Creation of a contact network to inquire interest in harvest days
- Planning of the most efficient route
- Transportation to the restaurants with a rented van (by the company)

3 Re-sale

- Sale to restaurants in prices above the prices paid to the harvesters
- Profits would go for the economical sustainability of the Cooperative
- At the end of the year profits would be redistributed between the harvesters
- Invest in what would be benefit the whole group and otherwise would not be done

SALES - SCENARIO A: IN COOPERATIVE SYSTEM - ADVANTAGES

This system would grant harvesters fixed prices depending on its caliber (incentivizing the harvest of the bigger ones) and would also reduce or eliminate their sale costs. The cooperative would have a bigger bargaining power.

Harvesters

Risk reduction – guaranteed price	- Assured revenue for the harvesters - Transportation costs would be minimized as the cooperative would grant it for all the barnacles sold to them - The Cooperative's profits would be redistributed at the end of the year
Cost reduction	
Dividends	

Cooperative

Collective bargaining power	- The bargaining power increases as there would be a unified force in the market - The brand increases power as more harvesters it represents - The possibility of the Co-fishing Project flows more smoothly - Enables the resolution of the collective investments needs that may arise
Possibility to investment	

Resource state

Encourage the harvest of better barnacles	- By paying by caliber the cooperative creates incentives to catch better - The cooperative could decide whether or not to go for harvest depending on market conditions, letting the resource to revitalize/grow - Opportunity to better monitor harvested and sold quantities, gathering it into data
Monitor harvested and sold quantities	

SALES - SCENARIO A: IN COOPERATIVE SYSTEM - PRICES

The purchasing prices to harvesters would be pre-established to encourage the picking of larger barnacles. The system would profit from the difference between those purchasing prices and the sale prices to the restaurants.

The cooperative system would define prices per batch size weekly or daily by studying supply and demand (quality of the sea, holidays and time of the year).

The prices have to be defined based on sizes, so that the purchase to the harvesters is fair and exempt.

Caliber	Sale to the cooperative system	Re-sale	Difference	Percentage per kg expected
Small	20 €	35 €	15€	20 %
Medium	35 €	40 €	5€	45 %
Big	45 €	50 €	5€	30 %
XXL	55 €	55 €	0 €	5 %
Average	**36 €**	**42,75 €**	**6,75 €**	

This price structure allows covering all the costs for the existence of the cooperative system, and also distributing margins at the end of the year to all harvesters. Moreover, it disincentives the capture of smaller barnacles, as harvesters would benefit a lot from selling medium calibers instead

- **This distribution could be made in order to further encourage the collection of larger barnacle:**

> % Larger Caliber → + Dividends

SALES - SCENARIO A: IN COOPERATIVE SYSTEM – EVOLUTION OF PRICES

The system has the potential to improve over time, resulting in more value to harvesters as well as incentives for more sustainable practices.

Over time, and with strong incentives to catch better barnacle, it is expected that the margins for harvesters present in the cooperative system will become even more attractive because:

Quantities of better calibers increase	Due to price incentives for harvesters to seek better barnacle to sell	Prices of sale increase	Due to the impact of certification and branding, it is possible for the cooperative system to obtain higher prices from restaurants
More profits distributed	The cooperative system will gain stability, requiring less working capital for support	Purchasing prices increase	With the stabilization of the cooperative system and the increase in sale prices, it will be possible to increase the purchasing prices of barnacles to the harvesters

The good functioning of the cooperative system will contribute even more to the long-term valorisation and sustainability of the resource

SALES - SCENARIO A: IN COOPERATIVE SYSTEM - P&L HARVESTERS

Assuming an average price of 37 € for sale to the cooperativon system, null selling costs and distribution of dividends, it is expected that the harvesters capture, on average, a margin of 35 €/kg.

Assuming:

Caliber	Sale to the cooperative system	Expected percentage*
Small	20 €	20 %
Medium	35 €	45 %
Large	45 €	30 %
Very Large	55 €	5 %
Average	**37 €**	

*this percentages go along with what has been informed by the harvesters

- Null cost of sales

- Distribution of dividends

The profit of the cooperating system should be redistributed by the harvesters. It would retain 30% of the profits for working capital and the **remaining 70%** would be distributed by the harvesters at the end of the year.

Income			
Sold quantities		13,7 Kg	
	Small caliber		2,7 Kg
	Medium caliber		6,2 Kg
	Large caliber		4,1 Kg
	Very large caliber		0,7 Kg
Price			
	Small caliber		20 €
	Medium caliber		35 €
	Large caliber		45 €
	Very large caliber		55 €
	Sales		493,20 €
	Dividends		51,00 €
Costs			
Harvest costs		65,94 €	
Sale costs		0 €	
	Total costs		65,94 €
	Pre-tax margin		478,26 €
	Margin per kg		**34,91 €/Kg**

SALES - SCENARIO A: IN COOPERATIVE SYSTEM - COSTS

This sales system would have the annual cost of warehouse income and operating costs in the harvesting months. Annually the costs are estimated to be around 21 290 €, a figure supported by the organization's profits.

Sale to Cooperative System	
Seller	800 € per month of harvest
Financial officer	800 € per month of harvest
Vehicle	500 € per month of harvest
Warehouse rent	549 €* every month

*50% off from the regular Docapesca warehouse's price

	Annual cost
Seller	5 600,00 €
Financial officer	5 600,00 €
Vehicle	3 500,00 €
Warehouse rent	6 590 €
Total	21 290 €

The cooperative would need someone to be in charge of sales (even if a harvester), someone exempt that would take care of the financials, to rent a vehicle for product transportation and to pay the warehouse rent. *(Appendix 21)*

SALES - SCENARIO A: IN COOPERATIVE SYSTEM - P&L SYSTEM

In this sale system it is estimated that the organization would obtain daily margins (in the days of activity) of 3 267 €, resulting from the purchase of barnacle and subsequent re-sale of 35 catchers.

Per day of harvest

	Caliber 1	Caliber 2	Caliber 3	Caliber 4	**Total**
Income					
Sold quantities	95,9 Kg	215,8 Kg	143,9 Kg	24,0 Kg	479,5 Kg
Sale price	35,00 €	40,00 €	50,00 €	55,00 €	--
Sales	3 356,50 €	8 631,00 €	7 192,50 €	1 318,63 €	20 498,63 €
Costs					
Purchased quantities	95,9 Kg	215,8 Kg	143,9 Kg	24,0 Kg	479,5 Kg
Price of purchase	20,00 €	35,00 €	45,00 €	55,00 €	--
Purchasing costs	1 918,00 €	7 552,13 €	6 473,25 €	1 318,63 €	17 262,00 €
Operational costs	-	-	-	-	687,76 €
Total costs	1 918,00 €	7 552,13 €	6 473,25 €	1 318,63 €	17 948,76 €
Margins					
Pre-tax margin					2 549,87 €/dia
Margin per kg					**5,32 €**

*Assuming that 85% of the harvesters would be in this system - excluding those who get regularly high prices

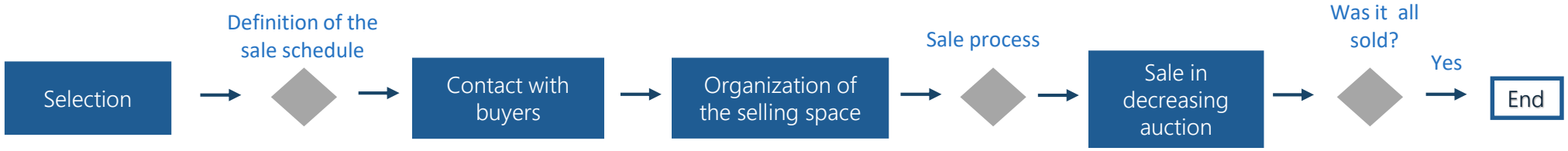
SALES - SCENARIO A: IN COOPERATIVE SYSTEM - RISKS

The biggest risks of this system are the fact that it is optional, meaning it is up to the harvesters to choose whether or not to enter, and the logistic problem of the harvest being made at different times of the day.

Risks	Mitigation
Only a few harvesters participate	- It is necessary to create clear incentives for selling to the cooperative system to be more profitable than the current scenario - As more harvesters come together they create incentives for others to do too
Harvest in different hours of the day	- Possibility of organizing two sales per day depending on the tides - Possibility to store the barnacle and at the end of the day make the distribution

SALES - SCENARIO B: CENTRALIZED IN AUCTION - PROCESS

Similarly to what is done in Baiona, buyers would move to a place of sale, where all Berlengas' barnacles would be available for auction.



1 Preparation of sale

- Barnacle treatment
- Product is stored if the sale is not made on the same day
- Definition of the initial bidding price according to demand and product harvested
- Informing buyers that there will be a sale

2 Sale in decreasing auction

- Same system that is used in Baiona
- Price starts high, buyers choose the quantities per batch they want as prices go down
- There would always be a chance for the harvester to decide whether or not to accept the asked price at the lower limits

SALES - SCENARIO B: CENTRALIZED IN AUCTION - LOCATION

To decide where the auction would take place, two hypothesis were analyzed: Peniche and Lisbon, though comparison of the advantages, convenience and costs.

Peniche

- In Peniche, the sale would take place in the harbour, in the rented warehouse from Docapesca
- The total costs per year would be 9 870 €

✓	Possibility to use Docapesca warehouse
✓	Creation of a Belrlengas barnacle unique spot, where all activities would occur
✓	Convenience for harvesters
✗	Inconvenience for buyers

Lisbon

- In Lisbon, the analyzed place to perform the auction was MARL (Mercado Abastecedor da Região de Lisboa)
- The total costs per year would be 36 396 €

✓	The majority of the barnacles are sold in Lisbon
✓	Inconvenience for harvesters to be present. A few would be responsible to sell all barnacles
✓	Convenience for buyers
✗	Much higher costs

To worth to move to Lisbon, an increase **of 4,44% in prices** would be required. However, after conversations with restaurant owners, it became clear that the buyers present in MARL would be the same that would be able to go to Peniche, meaning there is not many possibilities for prices to be higher. This is because the restaurant owners are used to receive the products at the door, and do not go to markets. Additionally, non-costs factors must be considered as well, as Lisbon would require more time and would perhaps be a problem for harvesters as they would have to give away the barnacles to whoever represent the sale. *(Appendix 22)*

SALES - SCENARIO B: CENTRALIZED IN AUCTION - DESCRIPTION

The decreasing auction would be held in Peniche, with an independent individual controlling the sale, and with the barnacles coded in order to maintain the anonymity of the responsible harvester.

Attributes	Description
Sales representative	To ensure the fair operation of the sale, there would always be an **independent representative** to watch the process. This individual could be from Docapesca, who would complement this work with the jobs in the Peniche's *lota* for an extra remuneration.
Place of sale	After analysis, it was decided that the most viable location to execute the centralized sale would be **Peniche**, instead of Lisbon. Costs would be lower, and buyers in Peniche are expected to be the same as they would be in Lisbon.
Sale system	The fairest selling system is the one of decreasing auction, because: - Allows to maximize price - It's fairer for all parties - Harvesters' bargaining power of the is not questioned - Clear incentive to catch better barnacles
Identification of harvesters	Each harvester would receive for his own barnacles. To ensure the buyers' impartiality, each harvester would have their barnacles coded. It would also allow to better monitor each one's performance.

SALES - SCENARIO B: CENTRALIZED IN AUCTION - ADVANTAGES

With this system the costs for harvesters would be reduced. In addition, these can watch the sale and the system would be completely transparent.

Characteristic	Associated advantage
Buyers do the iteneration	Reduced costs for harvesters since they are not the ones who make the distribution.
All barnacles are visible	It allows every buyer present to buy the barnacles more according to their needs, at a fair price.
Transparency in prices performed	Harvesters that sell cheaper are encouraged to selected better their product.
Harvesters can be present	If they wish, harvesters may be in the place of sale to follow the process.

SALES - SCENARIO B: CENTRALIZED IN AUCTION - UNPREDICTABILITY

This hypothesis is difficult to predict because it comes with a lot of unpredictability. It is hard to predict whether buyers will go to the location, their willingness to pay more, and the consequences of all that in the auction.

Auction

The major disadvantage of this hypothesis is that it is very unpredictable because it depends too much on:

- Buyers' risk aversion - Willingness to pay more and to make an extra effort depends on whether they are willing to lose the privilege of selling Berlengas' barnacles
- Number of buyers - greater or lesser risk for each buyer depending on the number of opponents
- Number of sellers - the greater the representativeness of the product in the auction, the more buyers would be interested in participating

Reverse/Dutch Auction

Expected Price= v(1) - "x"

x- represents risk aversion
Expected price is a trade-off between the amount and the probability of winning

Risk aversion

- In theory, the restaurants that sell Berlengas' barnacles would lose out on not selling due to the product's superior value;
- However, it is difficult to estimate whether they would be willing to go the extra mile to obtain the product.

Number of buyers

- It can be a crucial factor since there are not many houses selling Berlengas barnacle;
- If few buyers participate in the auctions, there is a strong possibility of collusion, as well as a problem of stock disposal.

Number of sellers

- The possibility of harvesters not adhering to the system and placing the product in restaurants would result in increased difficulties of obtaining better prices.

SALES - SCENARIO B: CENTRALIZED IN AUCTION - P&L OF HARVESTERS

With this system, and utilizing assumptions in terms of quantities sold in each caliber, harvesters in average are predicted to make a margin per kilo of € 29,85.

Assuming:

- 25% of quantities in the minimum range
- 50% of quantities in the average range
- 25% of quantities in the larger range

- The same prices as in the previous scenario

In **Baiona**, we found empirically that the average values close to each Caliber are, respectively:
- 37%
- 31%
- 32%

Due to the uncertainty that this system brings, we assume a **more pessimistic** scenario than what is happening in Spain.

Incomes			
Sold quantities		13,7 Kg	
	Minimum Caliber		3,4 Kg
	Medium Caliber		6,9 Kg
	Larger Caliber		3,4 Kg
Price			
	Minimum Caliber		26 €
	Medium Caliber		35 €
	Larger Caliber		45 €
	Sales		482,93 €
Costs			
Harvest costs		65,94 €	
Sale costs		7,98 €	
	Total costs		73,92 €
	Pre-tax margin		409,00 €
Margin per kg			**29,85 €/Kg**

(Appendix 23, 24)

SALES - SCENARIO B: CENTRALIZED IN AUCTION - RISKS

There are many associated risks. The main ones are the unpredictability, the possibility of collusion between buyers, and the stocks not flowing completely due to low demand.

Risks	Mitigation
Price unpredictability	- Daily definition of opening and closing price of an auction
Possibility of collusion	- Opening the auction to as many buyers as possible
Different harvest schedules	- Possibility to store the barnacle and at the end of the day to make the distribution - Weekly setting of auction time
External sale supervisor's unavailability	- Deciding together who oversees the sale, in a rotation system between harvesters
Demand being inferior to offer	- Contacting restaurants in advance so that demand is as high as possible - Management of quantities caught according to the seafood on the market

SALES - P&L's - ALL SCENARIOS

The best scenario for harvesters is to create a cooperative system, resulting in a higher margin per kilo. This is also the scenario where risk is minimized.

	Current Scenario		Scenario A	Scenario B
P&L	No calibration	Calibration	Cooperative	Sale in auction
Income				
Prices (average)	26,36 €	33,47 €	40,50 €	35,25€
Sales	361,09 €	479,13 €	493,20 €	482,93 €
Dividends			51,00 €	
Costs				
Harvest costs	65,94 €	65,94 €	65,94 €	65,94 €
Sale costs	26,36 €	39,28 €	0 €	7,98 €
Total costs	92,30 €	105,22 €	65,94 €	73,92 €
Margins				
Pre-tax margin	268,79€	373,91 €	478,26 €	409,00 €
Margin per kg	**19,62 €/Kg**	**27,29 €/Kg**	**34,91 €/Kg**	**29,85 €/Kg**

The scenario that would benefit the harvesters the most is the cooperation sale.

4. Implementation

4.1. Organization

4.2. Certification

4.3. Sales

4.4. Outline of Recommendations

OUTLINE OF RECOMMENDATIONS – BEST CASE SCENARIO STEPS

All necessary steps are taken to make the process evolve towards a cooperative system. It was took in consideration that abrupt changes in current organizations may not work, rather a more gradual and sensitive approach.

It is decision of the committee on how to implement recommendations as they are to enhance harvester's condition and the co-management system being to promote their spirit of responsibility we recommend to gradually change towards the cooperative system if agreed by all.

01

Support Calibration

The first step should be to show the benefits of calibration and incentivize it. The committee could promote knowledge-sharing so good practices extend to every harvester and increasing this way the group's bonding.

By seeing the worth of the bigger barnacles' batches, the harvesters will be incentivized to do a better selection in the water.

02

Foster cohesion

To proceed to either branding or a new process of sale the group's organization is key. With the existence of the committee harvester's voices gain power in a democratic process. It is expected that the actions will take place to stimulate cohesion and to measure potential interest in any of the other recommendations.

03

Begin certification and branding

After having a strong and decided group it will be possible to test more conjectural changes. Firstly it should be tested the model of own certification, even if prices do not rise right away there will be a period of adaptation either for costumers as for the harvesters, to learn how and what to certify.

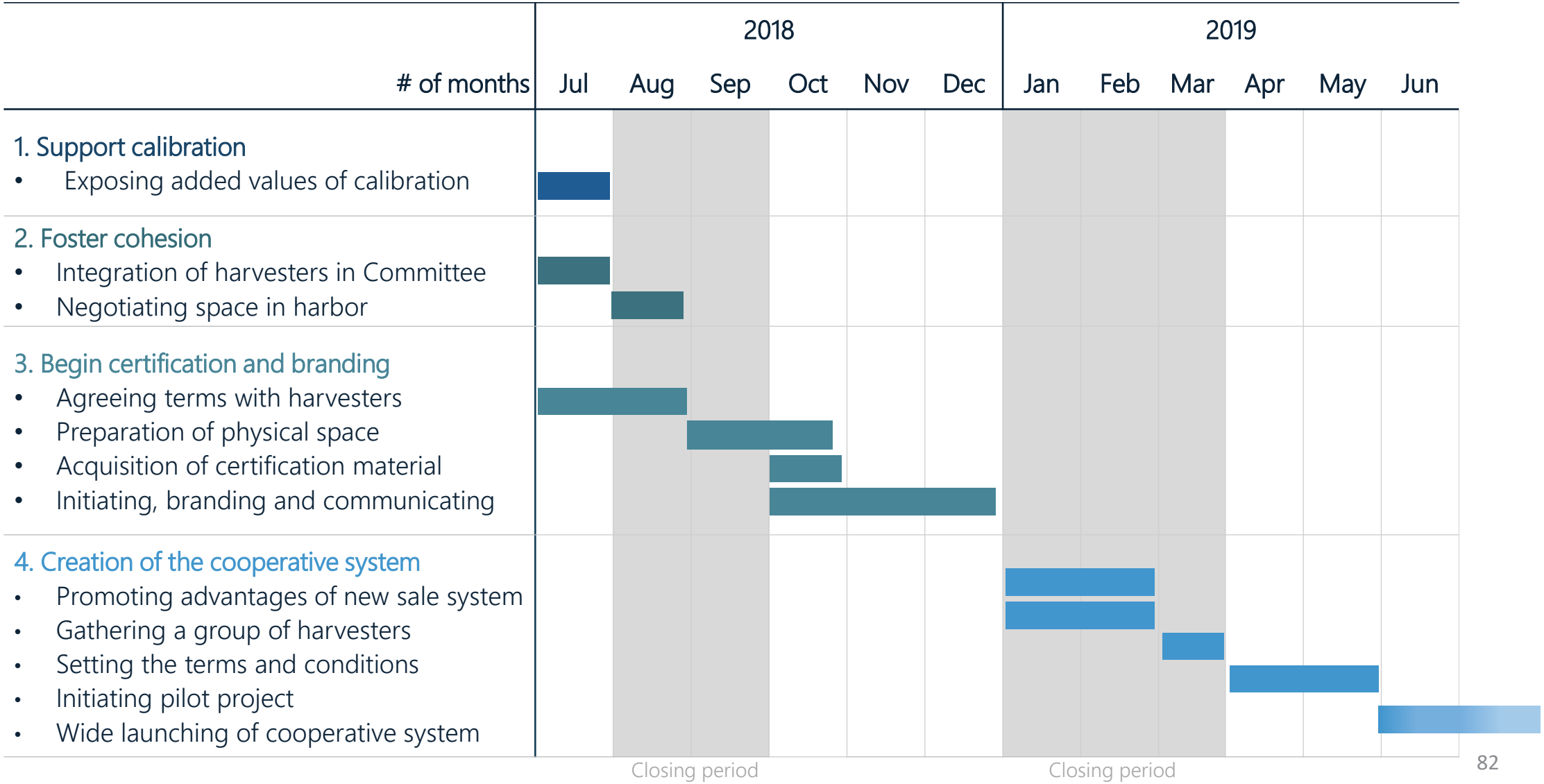
04

Creation of the Cooperative System

At the beginning, with less harvesters, to increase prices might be hard. It would be beneficial to start to test a pilot with harvesters that sell to middlemen, with prices a bit more attractive and gradually spread across the whole harvesters and gain strength in the market. The cooperative should try to represent at least 85% of the harvesters and to complement those quantities with certification.

OUTLINE OF RECOMMENDATIONS – IMPLEMENTATION PLAN

Following throughout all the steps mentioned is a phased project that should take plenty of months, but it fits the capacity of the committee to decide when and how to implement it.



AGENDA

1. Methodology
2. Background
3. Analyses
4. Implementation
5. Limitations
6. Personal Reflections
7. References

LIMITATIONS

During the course of the project, we were faced with some limitations due to the nature of the topic.

- **Lack of available information:** meaning almost all collected information was from meetings with entities from different areas;
- **Reluctance from harvesters:** Many harvesters were not willing to collaborate, being the found solution for us to be on the harbour on three harvesting days to make quick inquires when they docked. Before that, a few meetings were cancelled at the last minute. In the end, we ended up with a sample of 25 harvesters;
- **Reluctance from buyers:** Buyers (middlemen and restaurants) showed a great reluctance in giving us proper information, specially regarding buying costs;
- **Doubtful information**: Sometimes, the harvesters and buyers information was not very reliable, since there is secrecy on sensitive topics such as prices and it was not possible to develop enough levels of trust with everyone during the project period;
- **Assumptions:** Due to variations in harvesters and buyers responses, a few data was assumed. However, most of it was confirmed with our collected data. Additionally, some costs related with the implementation of solutions was also assumed, as real values couldn't be obtained;
- **Time**: Dependence on the availability of the stakeholders sometimes costed time that was already scarce.

AGENDA

1. Methodology
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PERSONAL REFLECTIONS

Key Learnings – Francisco Martins

Performing this project was as challenging as it was rewarding, and it gave me the enriching learning experience I had hoped for when I applied for a Consulting Field Lab. The idea of diving into a real-life scenario of a problem needed to be solved in an organization would fit right in to what I desired as a development tool for my professional life, and presenting such a work for the Oceano Azul Foundation and all its stakeholders ensured that purpose.

The fact that this project dealt with so many relevant parties gave me knowledge in finding the best way of communicating with each, and given the separate interests of the stakeholders there had to be a impartial evaluation of all views and issues. Understanding such a complex process of harvesting and all phases it goes through required investigation skills, as well as focus on detail to realize where to provide the best assistance. The joint nature of the project made me become a better team worker, sharing each other's ideas to reach common goal, whether for our weekly meetings with the client, our steering presentations and the work project itself. Given all the deadlines to be met and results needed to prepare to our client, performing this work really exposed the value of accountability, provided that our contribution would matter to real people in real-life situations.

Finally, and given this project's conclusion, I can say that it allowed me to receive plenty of experience and grow both professionally and personally.

PERSONAL REFLECTIONS

Key Learnings – Hugo Mota

After not seeming to fit in many of the proposed work projects by Nova, when I first heard about the possibility to work with barnacles harvesters and the Oceano Azul Foundation I knew right away it was something I needed to be part of. Mainly because my effort would be much impactful than in any other project, since I would create incentives for a more sustainable resource from an economic and an ocean point-of-view

As known form the beginning the project was very challenging and demanding. The lack of information was expected, nonetheless I thought we could manage to find it much easier and quicker than we actually did. Added to this, as information kept reaching us we felt somehow lost as the structure needed to be changed several times. The support from the members of the Foundation were crucial and much insightful for both parts. I feel that we were always building something completely different in a field were few had been being the most valued attributes resilience, pro-activity, adventurousness, social ease and something we many times lacked, organization.

Fortunately I felt that the majority of the stakeholders with whom we spoke were open and interested to help this important cause, which makes me hopeful. Nevertheless the amount of governmental support on some industries always keeps me intrigued. Overall I highly enjoyed to work on the valuation of the Berlengas' barnacle for all the things I have learned, people that I've met and because I feel that our contributions are going to be valued, maybe not at its fullest but I would be glad to at least be able to inspire contributes for a healthier ocean.

PERSONAL REFLECTIONS

Key Learnings – Pedro Chaves

This consulting lab was a great experience, as it offered me the possibility to work on a real-life project, with a very respectful client and a dynamism that would not be found in many projects, due the constant need to communicate with different entities and individuals.

The project had a big impact on both my hard skills and soft skills. Firstly, the need to constantly absorb new information and turn it into insights was challenging but very useful for my future professional steps. Secondly, the need to think creatively and outside of the box were definitely characteristics required by the project's nature, and also characteristics that I consider to be very important to succeed.

The challenge to work in a single team during the course of the project was also a novelty for me, and allowed me to develop communicational and interpersonal skills. Finally, the need to contact with so many people from different backgrounds over the project duration improved my capabilities to adapt and be more confident dealing with unknowns. It was also very important to keep an open mind, while always separating opinions from facts, as many times we heard different versions of the exact same story.

I think this project was the perfect way to finish this Master's degree, allowing me to develop my skills and apply the knowledge acquired in the past few years.

AGENDA

1. Methodology
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Thank You

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Appendix:

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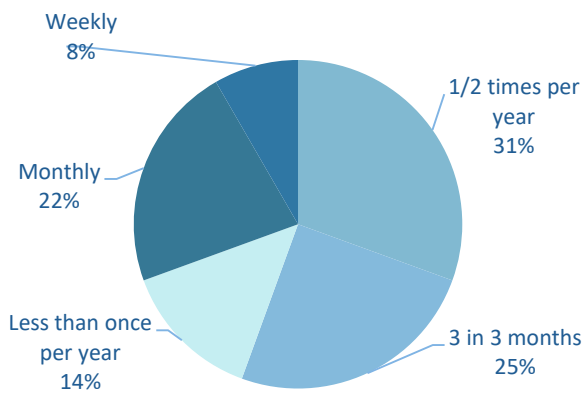
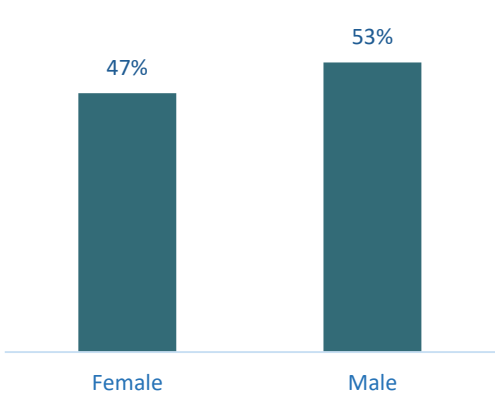
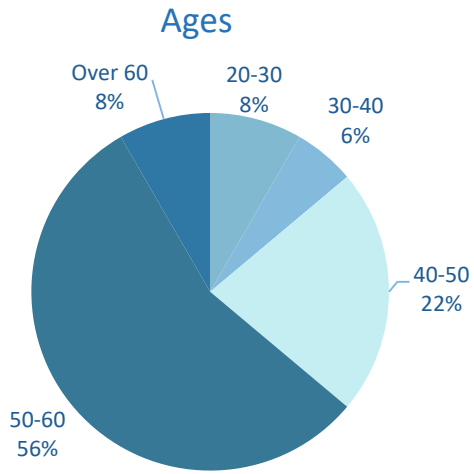
APPENDIX 1 – SURVEYS SAMPLES

Interviews with consumers:

- 6 in-depth interviews
  - 30 surveys at the door of seafood restaurants

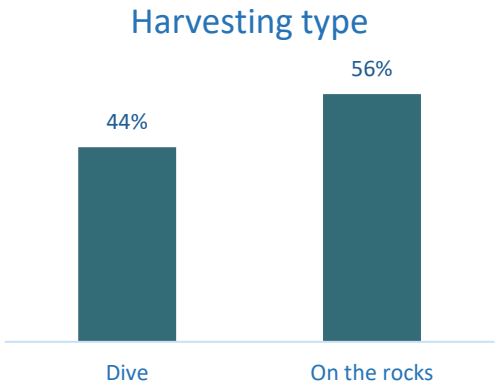


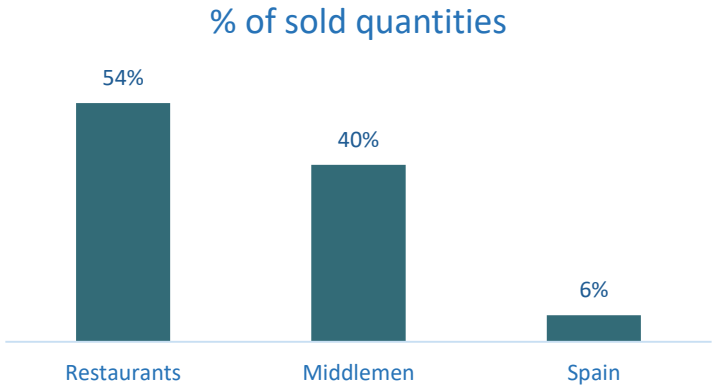




Interviews with harvesters:

- 3 in-depth interviews
- 25 surveys





APPENDIX 2 – QUESTIONNAIRE TO BERLENGAS BARNACLE HARVESTERS

Brief Inquiry to Harvesters

1- What type of harvest do you make mostly? On foot ▫ Diving ▫

Harvest and Selection

1- In the last 2 years, of the 100 days allowed, how many went to Berlengas? _____

2- How much do you harvest on average per day? _____

3- Do you do selection in the water? Why? Do you sell more expensive?

_ _____

4- Do you do selection on land / Calibration? Why? Do you sell more expensive?

_ _____ _____

If so:

4.1 What differences can you achieve with calibers? What are the prices of each?

Minimum _____ Medium _____ Maximum _____

4.2 Who are the customers for each caliber?

Minimum _____ Medium _____ Maximum _____

4.3- How long in that selection and where to do? _____

Customers

5- In the last year, to who did you sell the most barnacles? _ _____

5.1 Proportion by type of customer: restaurant / intermediary / export

Restaurants ▫ ___% Middlemen ▫ ___ % Final consumer ▫ ___%

Export ▫ ___% Other ▫ ___%

Prices

6- In the last year, what is the maximum and minimum you sold (and to what type of customer)? And on average? And two years ago, was it different?

	2016		2017	
	How much?	To whom?	How much?	To whom?
Maximum				
Minimum				
Average				

7- How much does it cost you a day to harvest in the Berlengas? _____

Version directly translated from the original one in Portuguese.

APPENDIX 3 – QUESTIONNAIRE TO CONSUMERS (QUALITATIVE)

Consumers' Questionnaire - Qualitative

1- Frequency - Seafood fan? How often do you consume barnacles? And how / when?

2- Factors - Which factors do you consider important in consumption? (ex : flavour, origin, size, ...)

3- Demand - Do you go to a restaurant on purpose to eat barnacles?

4- Competition - What do you feel may be a substitute for barnacles?

5- Place - Where do you normally shop? Do you regularly eat at a restaurant? Or several?

6- Selling price - Do you find it right for its features?

7 - Origin of the barnacles - Where do you know that there is good barnacle?

8- Recognition - Do you know the Berlengas barnacle specifically? (if so, which differences are noted)

To be completed by us:

Age approx. _____

Gender ____

Version directly translated from the original one in Portuguese.

APPENDIX 4 – QUESTIONNAIRE TO CONSUMERS (QUANTITATIVE)

Consumers Questionnaire - Quantitative

1- How often do you consume barnacles?
Weekly □ Monthly □ 3 in 3 months □ 1,2 times per year□ Less than that□

2- Do you usually go to a restaurant on purpose to consume barnacles?
Yes □ Sometimes □ No □

2.1 - (if so) In case there are no barnacles in the establishment, what would you do?
Change location □ Eat another seafood. Which? □ ___ Do not consume shellfish □

3- Of the following, what are the most important characteristics in the barnacles? * put order *
Size □ Taste □ Origin □ Sustainability of the harvest □

4- How much would be willing to pay for a kilo of barnacles? _ _____

5 - Where are the different types of barnacles you know?
* Berlengas? □ Other _____ *
** Ex: Berlengas; Cabo da Roca, Vila do Bispo, Cascais Area, Peniche, Sao Pedro Moel **

6. Do you feel any difference in the quality of the barnacle based on its origin?
Yes □ No □
6.1-If so, where is the best barnacle for you? _____

Assuming now that there is a Berlengas barnacle brand, of superior and guaranteed quality:

7- Would you be willing to pay more for this product?
7.1 * If so * How much would be willing to pay for a kilo of Berlengas barnacles? _ _____

8- Where would you rather buy them? Restaurant □ Supermarket □

To be completed by us: Seafood (Local): _ ____
Age approx ._ ____
Sex ____

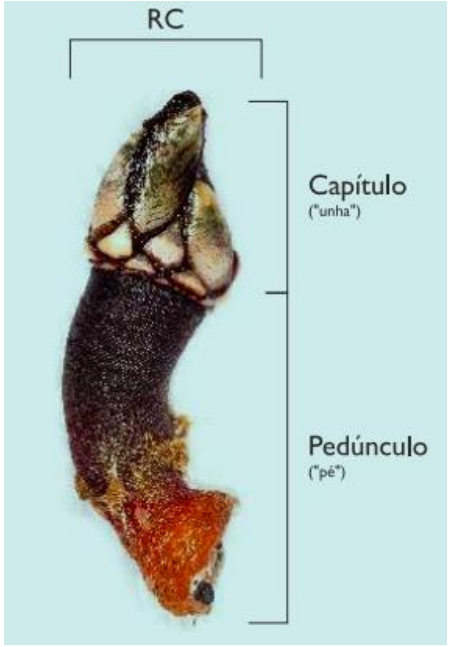
Version directly translated from the original one in Portuguese.

APPENDIX 5 – *POLLICIPES POLLICIPES*

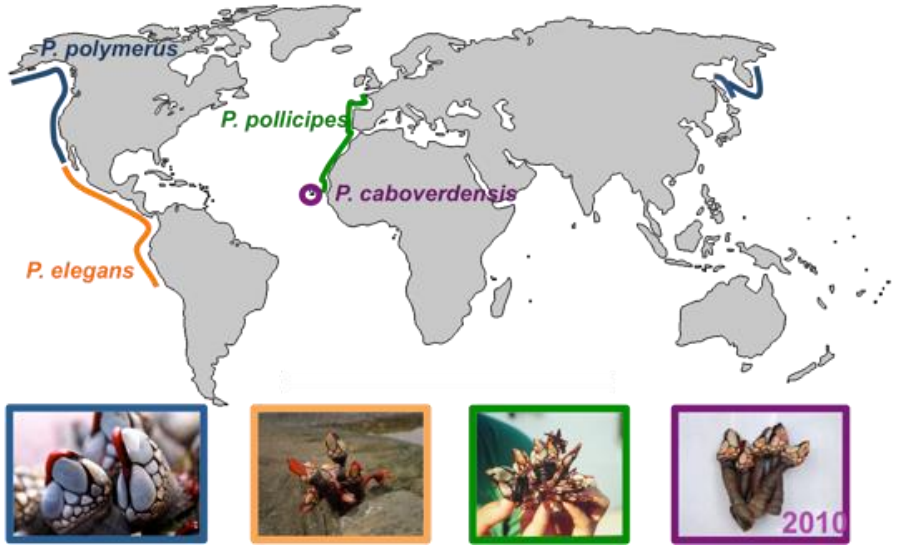
The goose barnacle is usually found in rocky substances in the sea throughout certain coastal areas. Having begun as a food for fishing communities, it began being seen as a delicacy.

Harvesting the product is a dangerous profession, nevertheless it may pay off given that there is some demand and recognition for the product. Licences can be either ludic or professional, and for each there are different sets of rules.

While widely spread thought Portugal, it is also over-exploited, leading to special regulations or interdictions to its harvest, depending on the area in question.

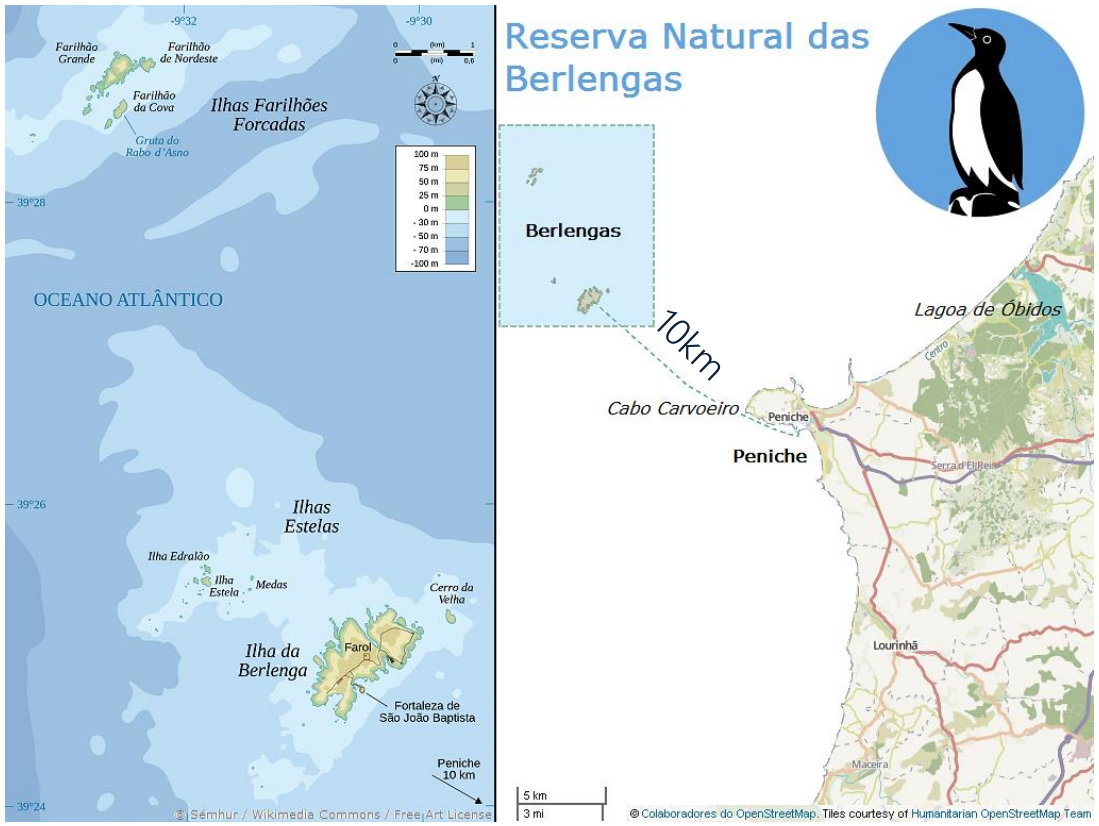


RC – Usually is this measure that defines size limits.

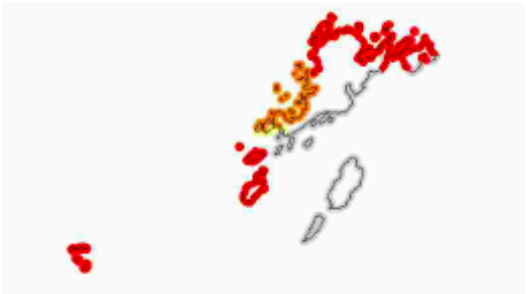


As visible in the map, the main species to be studied is the *Pollicipes Pollicipes*, present throughout the North Atlantic coastline.

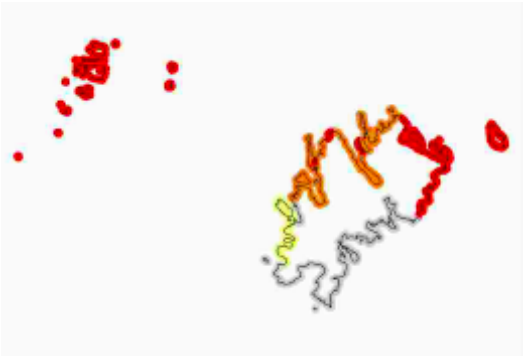
APPENDIX 6 – BERLENGAS



Berlengas' archipelago is composed by Berlengas, Estelas e Farilhões



Harvest zones in Farilhões



Harvest zones in Berlenga islands

Source: *PERCEBES - Gestão, Ecologia e Conservação do Percebe em Portugal*. 2016

APPENDIX 7 - LEGISLATION IN DIFFERENT AREAS OF THE COUNTRY

Legislation per area

- Barnacle harvest zones
    - Reserva Natural das Berlengas (RNB)
    - Parque Natural do Sudoeste Alentejano e Costa Vicentina (PNSACV)
    - Parque Marinho Prof. Luiz Saldanha (PMLS) – Center
    - Rest of the country

	RNB	PNSACV	PMLS	Resto do País
Recreational harvest	No	Yes	No	Yes
Recreational license	No	Yes, for residents	No	Yes
Professional harvest	Yes	Yes	No	Yes
Maximum quantities per day	20 kgs	10 or 15 kgs (depending on the season)	-	20 kgs
Size limit	23 mm (RC)	20 mm (RC)	-	20 mm (RC)
License limit	40	80	-	None
Closed season	Jan-Mar e Aug-Sep; 2ª, 6ª, weekends and holydays.	15 Sep. to 15 de Dez.	-	15 Sep. to 15 de Oct.

APPENDIX 8 – CURRENT SITUATION - HARVESTING COSTS

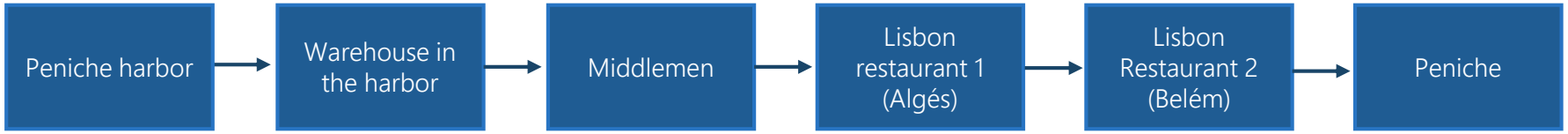
Harvest related costs

The harvesting costs were asked in the inquires conducted, being the average value **65,94€**. The bigger portion of these costs are the boat expenses (gasoline & maintenance), and were assumed to include as well symbolic values for the annual licenses, insurance and, in some cases, renting of a warehouse.
However, some divide the costs with 5 or more other harvesters, resulting in costs of 50€, and others don't with daily costs above 100€.

Sale related costs

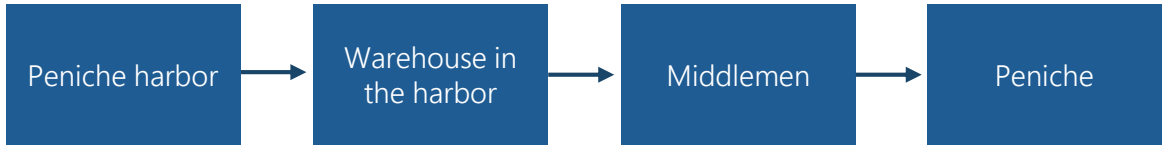
The selling costs, on the other hand, vary more from harvester to harvester, since each one has different routes and ways of selling. Bellow the routes of two scenarios of selling were computed. The first one is for those who calibrate, selling to both middlemen and restaurants in Lisbon, whilst the second one is for harvesters whose entire product goes for middlemen. The first route is assumed to represent 56% of the harvesters, and the later 44%.

Route 1- Middlemen and two restaurants



Harvesting day	Route*
Distance	189 Km
Travel time	3h45
Fuel	31,23€
Tools	8,05€
Total	**39,28€**

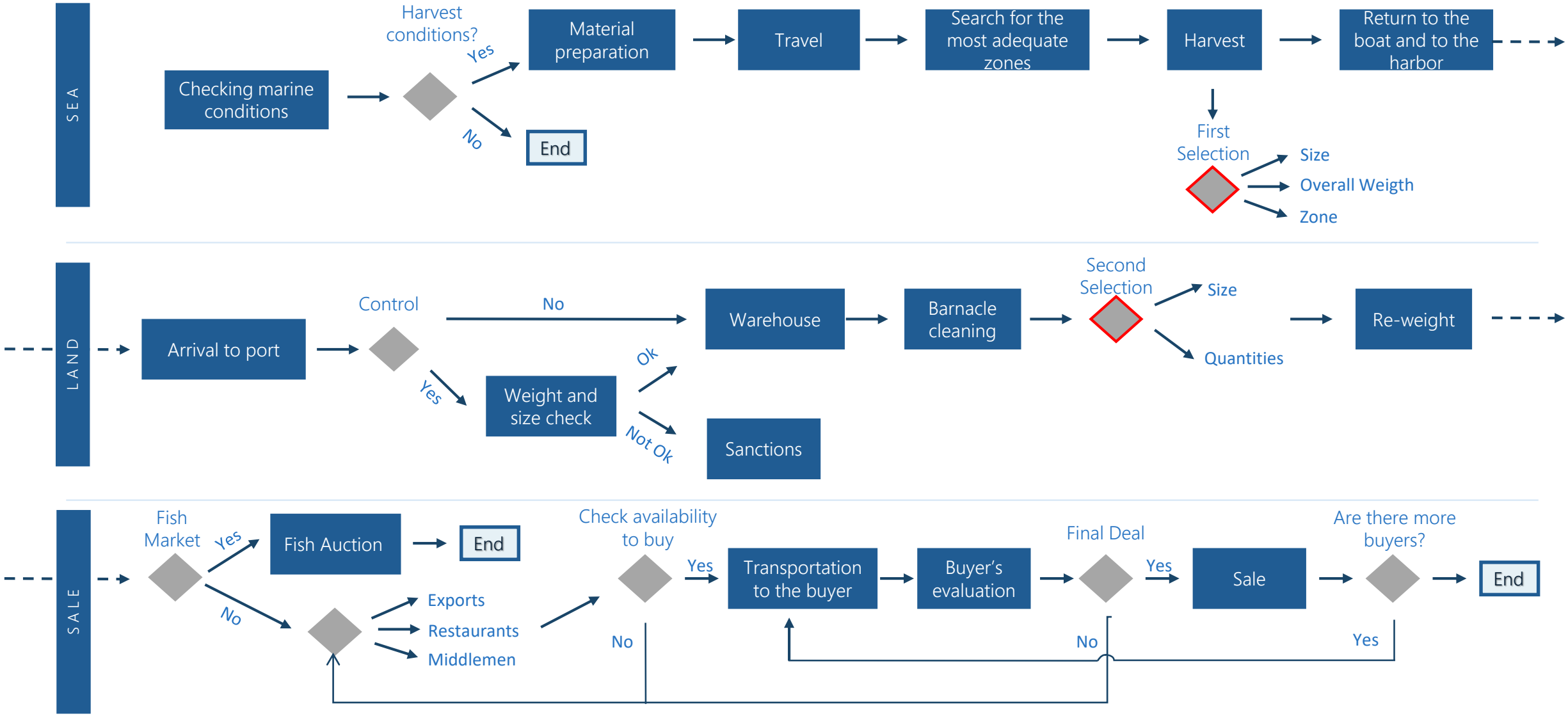
Route 2 – Only middlemen



Harvesting day	Route*
Distance	30 Km
Travel time	0h42
Fuel	5,16€
Tools	0€
Total	**5,16€**

*Values obtained from ViaMichellin.pt

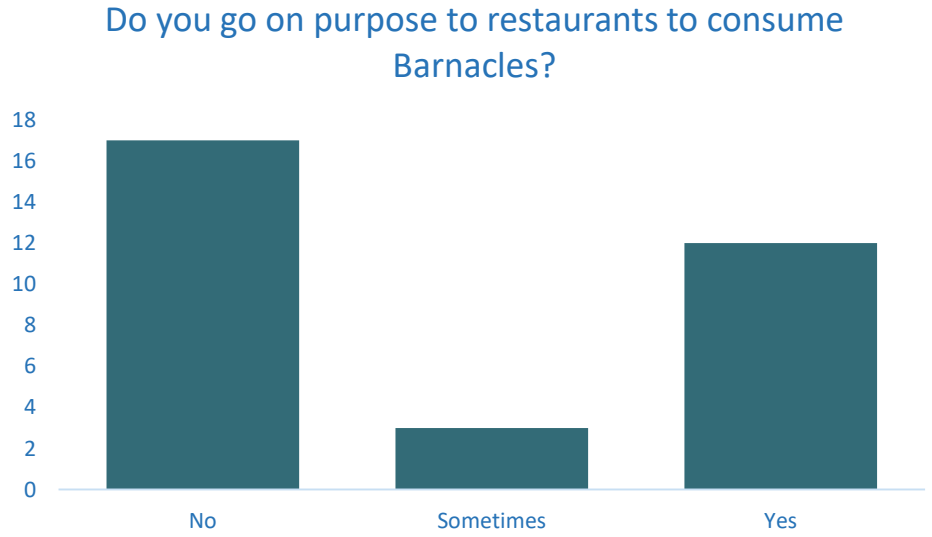
APPENDIX 9 - OPERATIONS - MAP



APPENDIX 10 – CONSUMERS' PERCEPTION

Main conclusions:

Some consumers go to the restaurants specifically for the barnacles, if there aren´t any they purchase another seafood, which is not consensual and may vary.



"In the seafood restaurant where I go, there are dishes that sometimes are out of stock and others that always exist, such as Barnacles. Therefore, when I go there, it's to order barnacles", M, 20-30 years old

The most important characteristics are freshness and taste.

- The taste and the freshness were unanimously mentioned by the interviewees.
- Few interviewees considered size, origin and the harvest sustainability as important factors.
- The size of the Barnacles is not seen, from the majority, as a sign of quality.

"Medium sized are the most tasteful", M,40-50 anos

"For me it's all about the taste. Size does not matter at all" , M, 20-30 years old

APPENDIX 11 – CONSUMERS' PERCEPTION

Main conclusions:

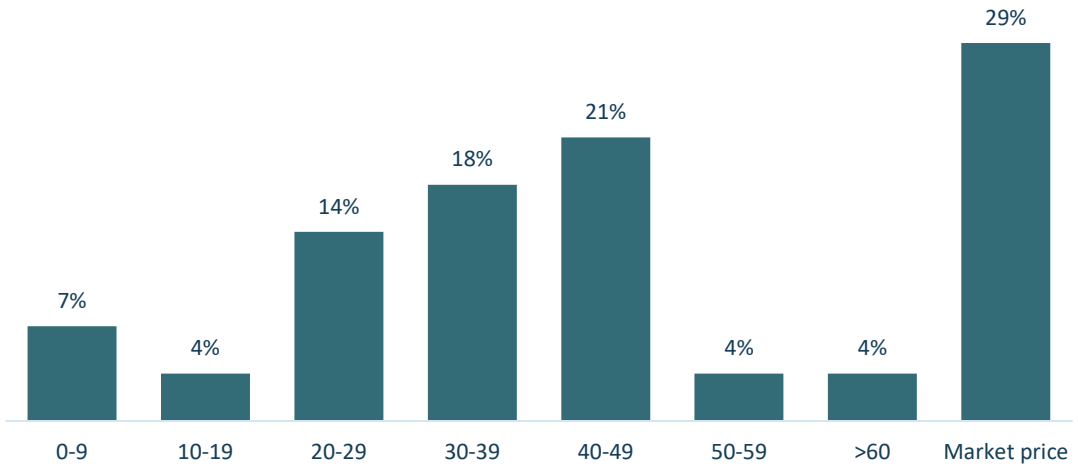
Many consumers revealed not to have the notion of the exact prices performed on the market. However they keep buying them.

Many consumers would be willing to pay more for a certified Berlengas's Barnacle.

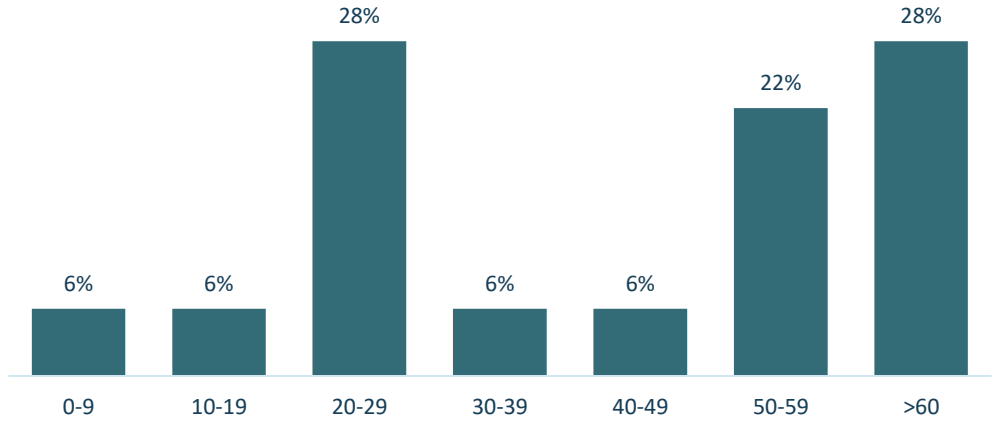
The practiced prices are within reach to many consumers, who perceive the product as a luxury and are willing to pay the market price.

The majority of the inquirees showed interest in a certified Barnacle of assured quality, accepting to pay more for such product

How much are you willing to pay for one Kg of barnacles?



Willingness to pay for one Kg of certified Berlengas barnacle?



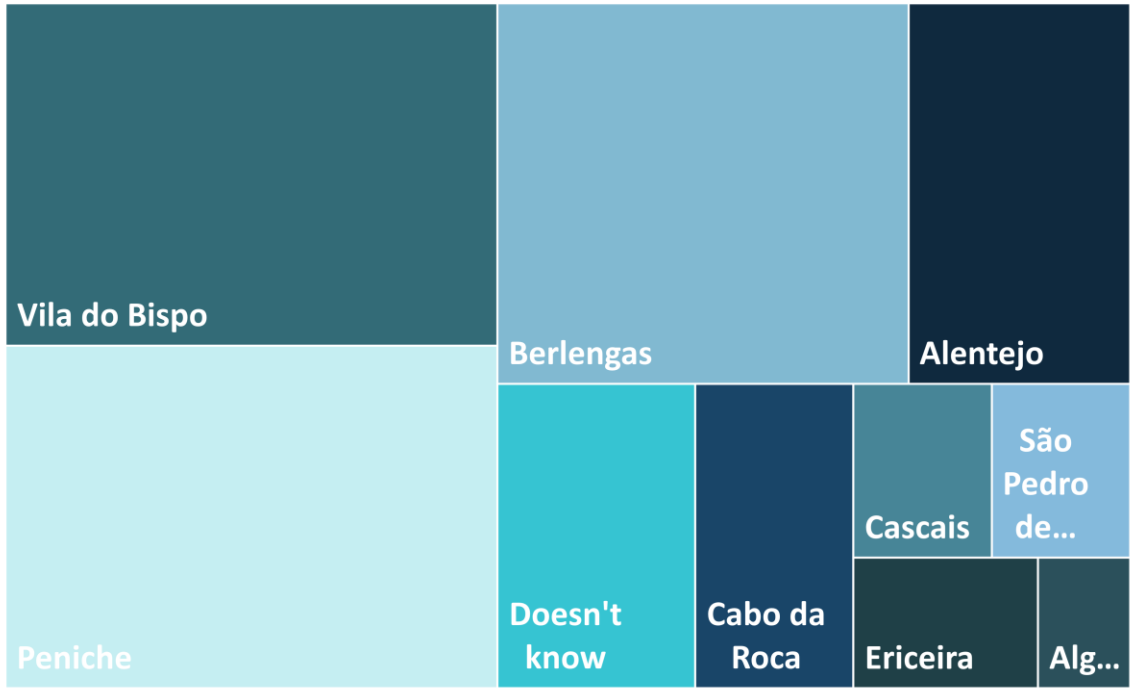
APPENDIX 12 – CONSUMERS' PERCEPTION

Main conclusions:

The existence of Berlengas barnacle is not known by a significant part of consumers.

- 13 out of 40 recognize the Berlengas barnacle.

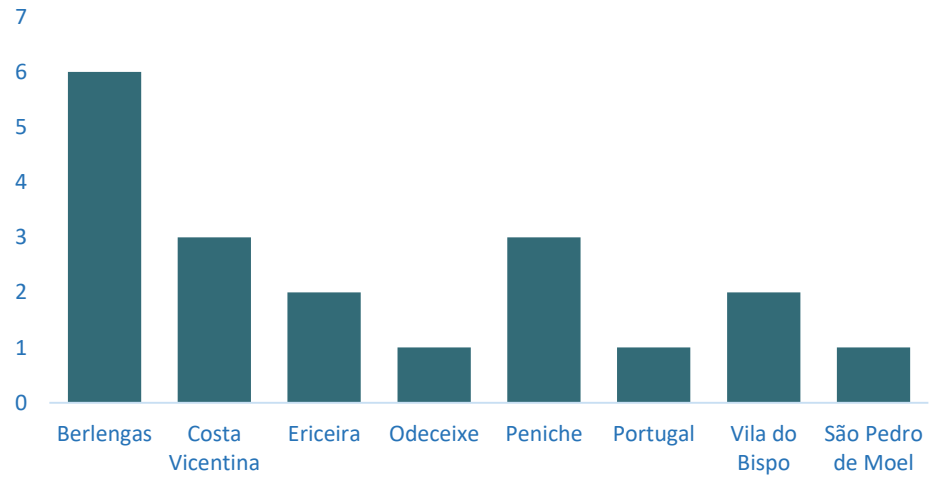
Recognized origin of barnacles



The Berlengas barnacle is favoured by many consumers.

- 6 out of 20 indicate the Berlengas barnacle as the best.

Where are the best Barnacles from?

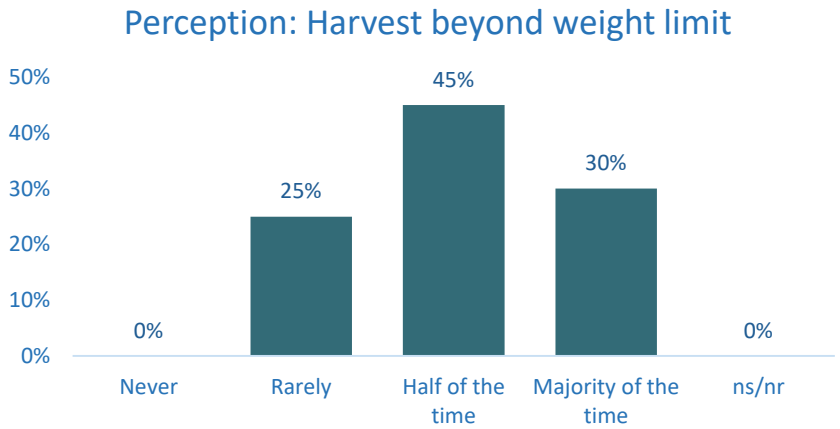


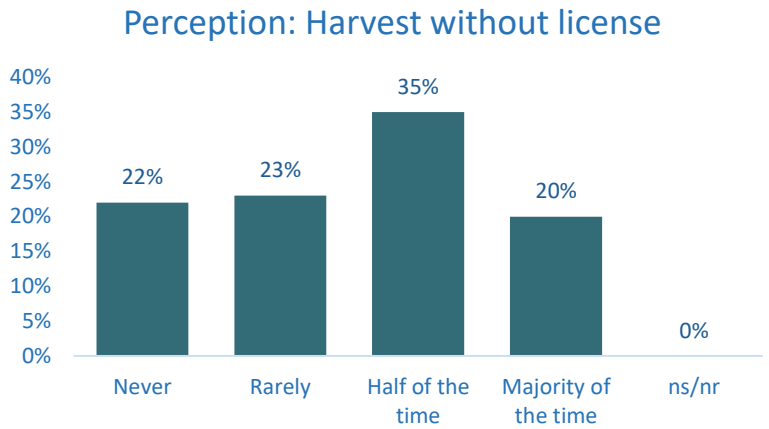
" The Berlengas barnacle is something with quality out of this world and it is our thing, we must know how to protect it" – M, 50-60 years old

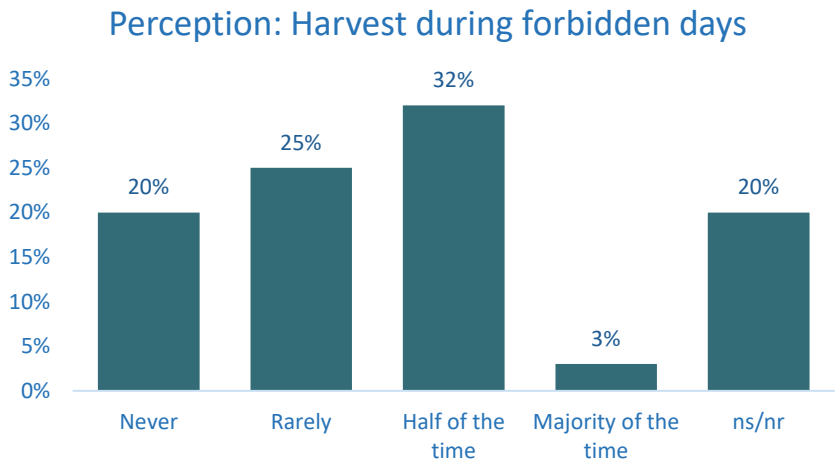
"They are the best because of the closing period and the license limit" – M, 50-60 years old

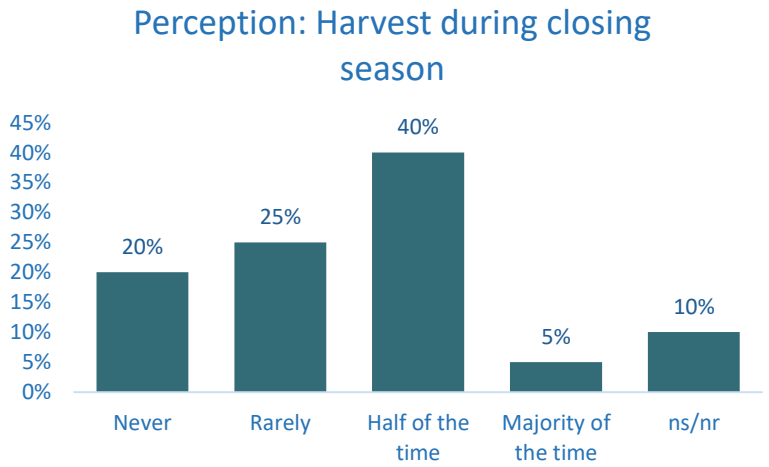
APPENDIX 13 – REGULATIONS' IMPACT

The lack of monitoring and supervision leads to a suspicion environment, where harvesters belief rules are not followed and admit, sometimes, not to follow rules









Source: *PERCEBES - Gestão, Ecologia e Conservação do Percebe em Portugal*. 2016

APPENDIX 14 – BAIONA – ORGANIZATION

Confradía de Baiona - Created to defend the interests of the harvesters of Baiona, Galicia.

Governance

General Assembly

Composed of all harvesters
- Defines plans of annual exploration
- Defines sanctions
- Elects members of the Board of Directors

Board of Directors

Comprising 6 harvesters
- Defines days and zones of fishing
- Chooses checkpoints on the coast and at sea

Main activities

Surveillance

- Hired watchmen
- Coordination of authorities with private force
- Entry and exit times
- Control stations: coast, sea, *lota*

Selection

- Carried out by all the harvesters in the same place
- Monitoring quantities caught and sold
- Freezers for storage

Sale

- All made in the *lota*
- Decreasing auction system
- Identification of product
- Pre-defined starting prices

APPENDIX 14B- BENCHMARKING – BAIONA

In Baiona many good practices are made to assure resource sustainability and to maintain its value:

Harvest:

Maximum days allowed per year defined	Avoids over-exploitation of the resource. Allows adjustments if resource deteriorates.	Harvest zone rotation	Allows the goose barnacles to grow in non-explored areas.
Maximum of 3 to 4 kg per harvester	Allows to limit the diary exploitation of the rocks, thus limiting the offered quantities.	Check points after harvest	On shore or sea. Essential to make sure that limits are being respected by all.

Selection:

Proper space for selection	Guarantees hygienic practices and storage in a convenient space.	Check points after selection	In the fish-auction. Guarantees that the product to be sold is well classified.

Sale:

Proper space for sale	Centralizes the offer of the goose barnacles, gaining bargaining power.	Closing the next day	In case the prices are too low. Avoids the harvest in days with low demand.

APPENDIX 15 – INCREASING HARVESTER POWER ACCORDING TO PORTER

In Michael E. Porter's "The Five Competitive Forces That Shape Strategy" (2008), when it is considered the power of suppliers, it is mentioned cases in which higher prices were charged to the same demand, there was a control of the offer through limitation of quality or services or costs shifted to other industry players, as examples of ways in which suppliers increased their bargaining powers in an industry. He then followed by listing methods that can **increase suppliers' power** overall:

- Concentration of producers in relation to the players that buy the product;
- Low dependency on the specific industry for its revenues;
- Costs for the buyers of switching their suppliers;
- Differentiation of the products offered;
- No substitute for the supplied product;
- Possibility of suppliers entering market and competing with the industry.

Reference: *"The Five Competitive Forces That Shape Strategy"* by Michael E. Porter, Harvard Business Review, 2008

APPENDIX 16 – INCREASING HARVESTER POWER ACCORDING TO PORTER

Bargaining power factors	Implementability	Applied to project
Higher prices	Yes	Inability to raise prices substantially is one of the key problems faced by the harvesters, but the data gathered from the stakeholders show that current demand would maintain even with higher prices.
Differentiation	Yes	The Berlengas barnacle is already seen as having special characteristics in comparison to the remaining ones, but there are further measures such as certification which can enhance that fact.
Shifting costs	Yes	Certain tasks currently performed by the harvesters, such as distribution and delivery, go beyond what is usual in the profession and could theoretically be shifted towards other players.
Concentration	Yes	Higher unity between producers means less incentives to bring down prices and a higher overall bargaining power.
Entering industry	Yes	A goal of this project is to increase the margins captured by the harvesters, and that means performing roles currently attributed to the middlemen, if necessary.
Controlling offer	No	Limiting the quality and services cannot be implemented in this specific case as top quality is key for the Berlengas barnacle.
Lack of substitute	No	While there are a few substitutes for the Berlengas barnacle, this project does not aim to eliminate them, but rather to provide value to the own product itself.
Low dependency	No	Averaging of 31 days of harvest in the Berlengas, every professional has other jobs that provide them throughout the rest of the year, meaning that the activity in the BNR isn't necessarily the main one.
Switching costs	No	To the buyers advantage there are no switching costs present due to the nature of this industry in particular.

Reference: *"The Five Competitive Forces That Shape Strategy"* by Michael E. Porter, Harvard Business Review, 2008

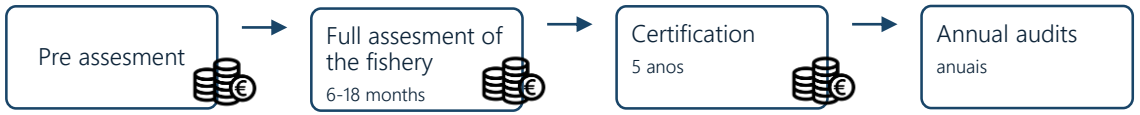
APPENDIX 17 - CERTIFICATION - OPTION 1- EXISTING CERTIFICATES

MSC

The Marine Stewardship Council is an international non-profit organization created to recognize and reward efforts to protect oceans and safeguard seafood supplies for the future.

Its certification program requires fisheries to abide by some very high standards regarding sustainable fishing and effective management.

The process to acquire the certificate is long and complex, requiring several evaluations of the fishery conditions and harvesters practices.



- ✓ Label with some recognition
- ✓ Guarantees sustainable practices
- ✓ Requires great management and organization
- ✗ Long and costly process
- ✗ No real guarantees of value increase
- ✗ Only 5 years time span of the label

PDO/PGI

The Protected Designation of Origin (PDO), and Protected Geographical Indication (PGI) are European Union's quality logos to promote and protect the region where the product comes from.
These certificates are intended to convey trust to consumers, who can rely on the authenticity in terms of the origin of the Barnacles, as well as serve as a marketing tool, since it transmits the idea of better quality than the other Goose Barnacles.
To receive a POD certificate, the entire product must be from and processed in the specific origin, in order to have unique properties.

- ✓ Low cost of adherence
- ✓ Transmits the origin and quality of the product
- ✓ Makes it difficult for other Barnacles to be sold as Berlengas'
- ✗ Hard to measure value increase

APPENDIX 18 - OPTION 2 – OWN CERTIFICATE

Brand:

"A name, term, sign, symbol or design, or a combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors."

-definition according to the American Marketing Association

Purpose:

An own branded certificate would transmit a few selected and very important ideas for customers, all very specifically related to the sustainability of the harvest in this natural reserve. The aim would be to draw interest not just for the environmental benefits, but also for the quality of the barnacle as a special product. Brands can be a powerful tool to differentiate a product, add value and reach consumers' loyalty, recognition and preference, as argued by *Phillip Kotler*. *(Appendix 4.2 A)*

Characteristics:

- ✓ Flexibility to transmit chosen values, instead of fixed attributes
- ✓ Create something unique for the Berlengas' goose barnacle
- ✓ Increase recognition of the consumers about this product
- ✓ Increase availability to pay more
- ✗ Need to maintain quality standards at all time

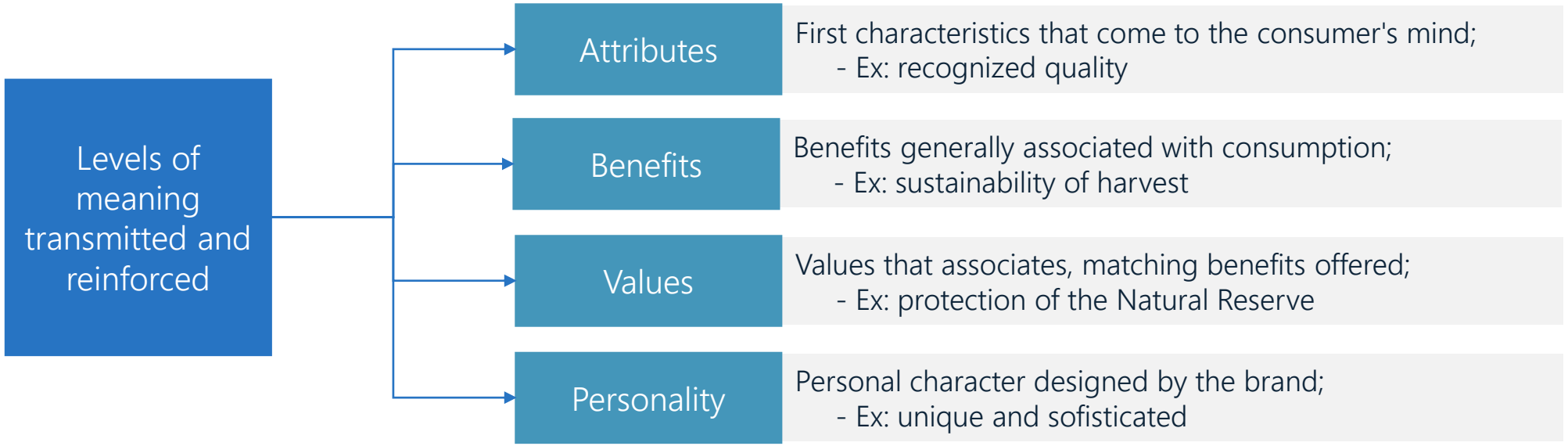
Stamp emitted to guarantee a quality barnacle, used in Vila do Bispo. It includes characteristics such as weight, lot, class, date of harvest and others in its QR code, accessible to anyone.

Source: Bennett, P. D., & American Marketing Association. (1995). Dictionary of marketing terms.

APPENDIX 19 – DEFINITION OF BRAND

According to Philip Kotler and Gary Armstrong, a brand is defined as "a name, term, sign symbol (or a combination of these) that **identifies** the maker or seller of the product".

- According to Kotler, a brand identifies a range of products to **differentiate** them from the rest;
- Powerful brands lead consumer **loyalty** even if alternatives are cheaper;
- By facilitating **recognition** and **preference**, consumers see it as an important part of the product that **adds value** to it.



Source: *Kotler, 2001 - Principles of Marketing*

APPENDIX 20 - MONTHLY COSTS OF COOPERATION SYSTEM

For the cooperation system were consider the following operation costs:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Seller	- €	- €	- €	800,00 €	800,00 €	800,00 €	800,00 €	- €	- €	800,00 €	800,00 €	800,00 €	5 600,00 €
Financial officer	- €	- €	- €	800,00 €	800,00 €	800,00 €	800,00 €	- €	- €	800,00 €	800,00 €	800,00 €	5 600,00 €
Vehicle	- €	- €	- €	500,00 €	500,00 €	500,00 €	500,00 €	- €	- €	500,00 €	500,00 €	500,00 €	3 500,00 €
Warehouse rent	549,13 €	549,13 €	549,13 €	549,13 €	549,13 €	549,13 €	549,13 €	549,13 €	549,13 €	549,13 €	549,13 €	549,13 €	6 590 €
Total	549,13 €	549,13 €	549,13 €	2 649,13 €	2 649,13 €	2 649,13 €	2 649,13 €	549,13 €	549,13 €	2 649,13 €	2 649,13 €	2 649,13 €	21 290 €

In the “warehouse rent” were included utility costs plus a monthly rent to Docapesca.

APPENDIX 21 - SCENARIO B: CENTRALIZED IN AUCTION - LOCATION

	Peniche	Lisbon
Total cost per year	9 870 €	36 396 €
Cost per harvester per day	7,98 €	29,4 €

Peniche

	Small caliber	Medium caliber	Big caliber
Harvested quantities (Kg)		16,4	
Sold quantities (Kg)	3,43	6,85	3,43
Prices	26,00 €	35,00 €	45,00 €
Revenues	89,05 €	239,75 €	154,13 €
Harvest expenses		65,94 €	
Sales expenses		7,98 €	
Total costs		73,92 €	
Margin per caliber	15,13 €	239,75 €	154,13 €
Total margin		409,01 €	

Lisbon

	Small caliber	Medium caliber	Big caliber
Harvested quantities (Kg		16,4	
Sold quantities (Kg)	3,43	6,85	3,43
Prices	26,00 €	35,00 €	45,00 €
Revenues	89,05 €	239,75 €	154,13 €
Harvest expenses		65,94 €	
Sales expenses		29,40 €	
Total costs		95,34 €	
Margin per caliber	- 6,29 €	239,75 €	154,13 €
Total margin		387,59€	

Using the *Solver* tool in Excel, the diferences in margins were set to be zero, by changing the prices in Lisbon. The conclusion was that an average increase of 4,44% in prices would be needed to overcome the extra costs.

APPENDIX 22 - SCENARIO B: CENTRALIZED IN AUCTION - COSTS

Considering 31 harvesting days in a year, evenly distributed by harvesting months, the total costs associated to the sales' centralization for both locations are as follow:

Van rental	1200 €/harvest month	Payment to sale representatives	100 €/day for Peniche; 200 €/day for Lisbon
Fuel and tools	975 €/year	Sales software	180€/year
Renting of the DocaPesca warehouse	549,13 €/month	Storage boxes	120€ (CAPEX)
Renting of selling space	2000 €/harvest month	Bar code scanning machine	30€ (CAPEX)

Peniche

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Warehouse rent	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	6 590 €
Sales Software	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	180 €
Sales representative	- €	- €	- €	442,86 €	442,86 €	442,86 €	442,86 €	- €	- €	442,86 €	442,86 €	442,86 €	3 100 €
CAPEX*													
Bar code scanning machine	30,00 €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	30 €
Boxes	120,00 €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	120 €
Total	714 €	564 €	564 €	1 007 €	1 007 €	1 007 €	1 007 €	564 €	564 €	1 007 €	1 007 €	1 007 €	9 870 €

Lisbon

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Car rental	- €	- €	- €	1 200 €	1 200 €	1 200 €	1 200 €	- €	- €	1 200 €	1 200 €	1 200 €	8 400 €
Fuel	- €	- €	- €	98,58 €	98,58 €	98,58 €	98,58 €	- €	- €	98,58 €	98,58 €	98,58 €	690 €
Tools	- €	- €	- €	40,74 €	40,74 €	40,74 €	40,74 €	- €	- €	40,74 €	40,74 €	40,74 €	285 €
MARL rent	- €	- €	- €	2 007 €	2 007 €	2 007 €	2 007 €	- €	- €	2 007 €	2 007 €	2 007 €	14 051 €
Warehouse rent	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	549 €	6 590 €
Sales Software	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	15,00 €	180 €
Sales representative	- €	- €	- €	885,71 €	885,71 €	885,71 €	885,71 €	- €	- €	885,71 €	885,71 €	885,71 €	6 200 €
CAPEX*													
Bar code scanning machine	30,00 €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	30 €
Boxes	120,00 €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	- €	120 €
Total	714 €	564 €	564 €	4 796 €	4 796 €	4 796 €	4 796 €	564 €	564 €	4 796 €	4 796 €	4 796 €	36 396 €

* Assuming a five year time spawn for these materials

APPENDIX 23 - INSTRUMENT FOR AUCTION

Information Systems

In order to not create incentives to catch up the worst quality barnacle, every harvester, regardless of the sales system chosen, must receive for his product. This brings up the need to create a labelling system during the selection so that, in terms of transactions, the harvester is identified.

Represents the harvester

Sale of certain quantities at a certain price

Entering quantities and price that a certain batch is sold

Information is handled in a computer system

Payment is made to the harvesters

Cost:

- There are systems available for 15 € monthly or even for free, representing a good opportunity to identify and organize the sales of each producer.

To guarantee:

- Transparency throughout the process;
- Impartiality in the sale (the consumer not being able distinguish with certainty which harvester is buying);
- That whoever is at the place of sale represents the intentions of all catchers.